DOCUMENT RESUME

ED 033 048 24 SE 007 584

Skill-Level Grouping in Modern Mathematics K-6; Attachment I.
Clark County School District, Las Vegas, Nev.
Spons Agency-Office of Education (DHEW), Washington, D.C. Bureau of Research.
Bureau No-BR-8-I-065
Pub Date Jun 69
Grant-OEG-9-8-081065-0159-010
Note-219p.
EDRS Price MF-$1.00 HC Not Available from EDRS.
Descriptors-Arithmetic, *Elementary School Mathematics, *Evaluation, *Tests
Identifiers-Nevada

Included in this document are tests used to assess achievement in mathematics (K-6) in an experimental study conducted in the Clark County School District in Nevada. Each test is designed to assess learning at a definite skill level. Included are directions for administering each test, behavioral objectives assessed by each test and each test item, and desired answers for each test item. This document is the best copy available of the report. [Not available in hard copy due to marginal legibility of original document]. (RP)

ED0 33048

BR 8-I-065
PA 24
OE/BR

ATTACHMENT I

CLARK COUNTY SCHOOL DISTRICT

FINAL REPORT

Project No. 8-1-065
Grant No. OEG-9-8-081065-0159(010)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

SKILL-LEVEL GROUPING IN MODERN MATHEMATICS K-6

June, 1969

BEST COPY AVAILABLE

SE007 584

U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

MATHEMATICS CONCEPTS TEST

Basic Test: Level One
(Grade One)

ANSWER KEY AND TEACHERS' GUIDE

Please read every item to the children. The entire class should work on each item simultaneously. Note special comments on certain items. Comments and answers are written in long hand. You should have both the students copy and Teachers' Guide before you as you give the test.

Timed Tests: These should not be given with the other part. Timing is extremely important, if we are to test the objective as stated in the curriculum guide. Place paper face down on student's desk. At the signal have students turn the papers over and begin working. Be sure to call "stop" in exactly 3 min. or 2 min., as the case may be.

Excluding the timed tests, this is a 105 problem test. Since some items have more than one part, the written numerals in ( ) are to help you in scoring. This should probably be given in two different sessions. You may break it according to your judgement.

A CROSS REFERENCE OF OBJECTIVES FROM THE CLARK COUNTY CURRICULUM GUIDE AND ITEMS IN THE MATHEMATICS COVERAGE TEST

CODE: "N" means number strand; "Nu" means numeration strand; "O" means operations strand; "G" means geometry strand; and, "M" means measurement strand.

An example: M-4 means objective #4 in the measurement strand.

OBJECTIVE #	ITEM #
N-1	1
N-2	2,3
N-3	4-6
N-5	7
N-6	8-10
N-7	11-13
N-4	14-15
N-8	16-18
N-9	19-21
N-10	22,23
Nu-1	24-27
Nu-2	28-30, 35-45
Nu-3	50-59
Nu-4	31-34
Nu-5	46-49
Nu-6	19-21
O-1	60
O-2	61-63
O-3	64-66
O-4	67
O-5	+ & - facts
O-6	68,69
O-7	70-75
O-8	76
O-9	77
O-10	78
O-11	79-81
O-12	82-85

OBJECTIVE #	ITEM #
G-1	86-89
G-2	90-91
G-3	NC
G-4	92-95
M-1	97
M-2	96
M-3	98
M-4	99-100
M-5	NC
M-6	102
M-7	104,105
M-8	104,105

Items 101 and 103 problem solving.

NC means not covered.

EXAMINER'S GUIDE

Please read every item to the children. Have students read silently while you read aloud. The entire class should work on each item simultaneously. Note special comments on certain items. Comments are written in long hand.

At the end are 2 timed tests. These should not be given with the other part. Timing is extremely important, if we are to test the objective as stated in the curriculum guide. Excluding the timed tests, this is a 105 item test. The test should probably be given in at least two different sessions. You may break it according to your judgement.

MATHEMATICS CONCEPTS TEST

Basic Test: Level One

Part I

Name Last	First	Middle
Teacher	School	Grade
Date	Test Score -- Part I	

DIRECTIONS TO STUDENTS

1. Write your name and other information on the top of this sheet.
2. Write your answers on the test booklet.

MATHEMATICS CONCEPTS TEST

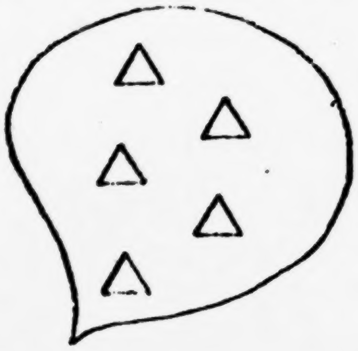
Basic Test: Level One

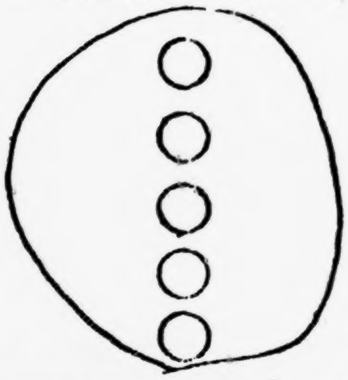
1. Look at this set of numerals. Draw a ring around the object which is not a member of the set of numerals.

{1, 2, 3, 4, M, 5, 6} Emphasize "not."

****

2. Are these sets equivalent? Circle the answer. YES NO



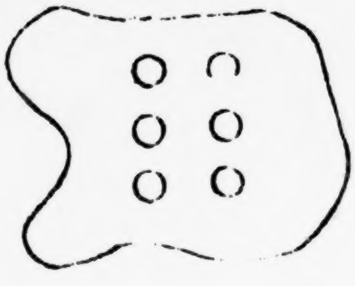


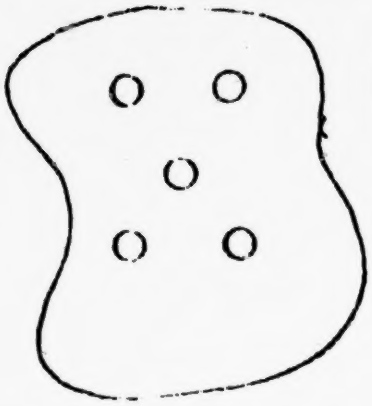
Do not explain the word "equivalent."

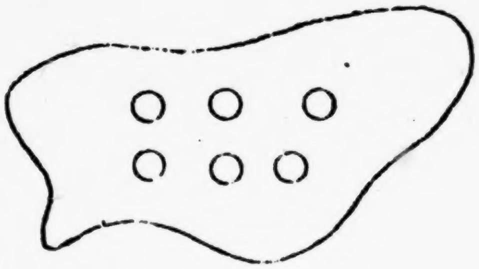
3. Match by one-to-one correspondence to check your answer to the question in number 2 above.

****

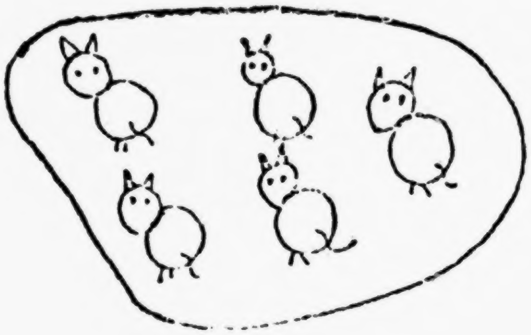
4. Put an "X" on each of the two equivalent sets.

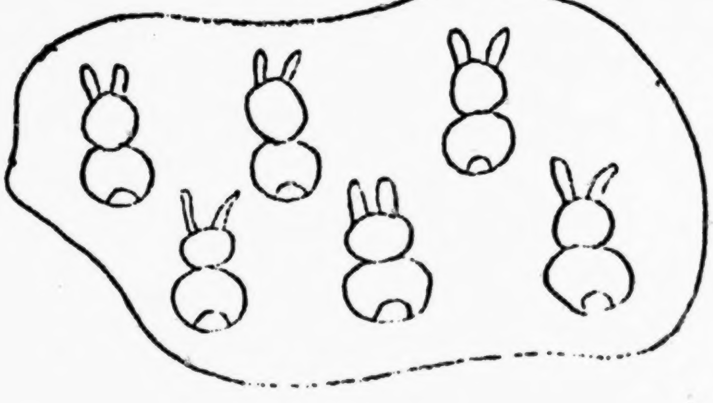




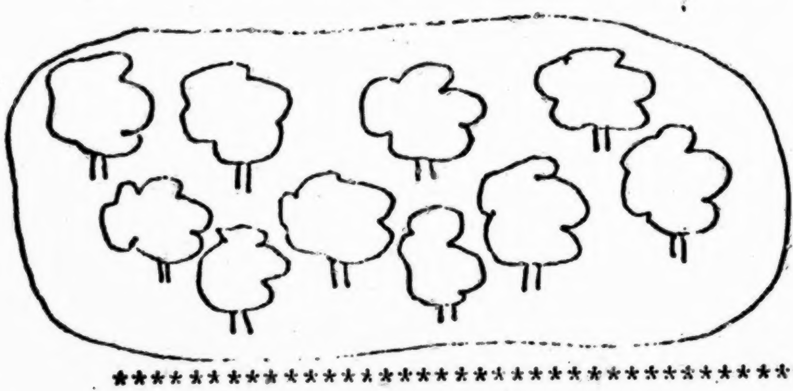


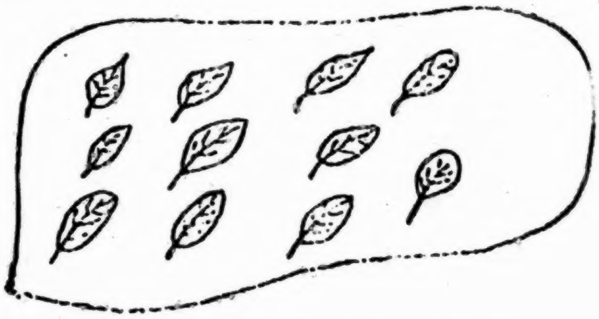
5. Put an "X" on the set that has more members. Emphasize "more."





6. Put an "X" on the set that has less or fewer members.





****

7. How many members are there in the set of elephants on the ceiling of this room?

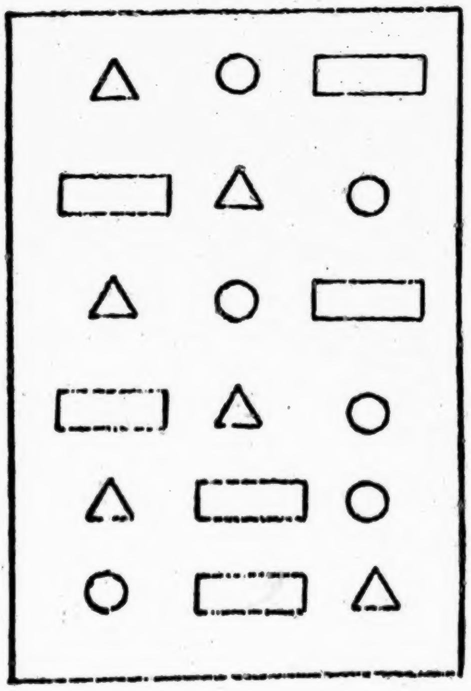
____

MAKE THREE SUBSETS FROM THE SET AT THE RIGHT:

8. The set of O's

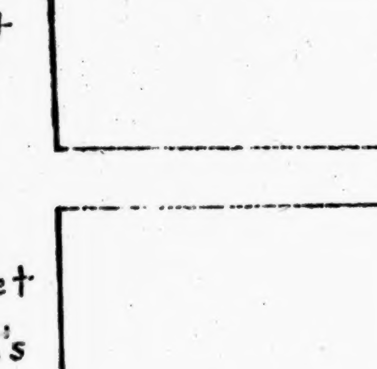
9. The set of △'s

10. The set of ▭'s



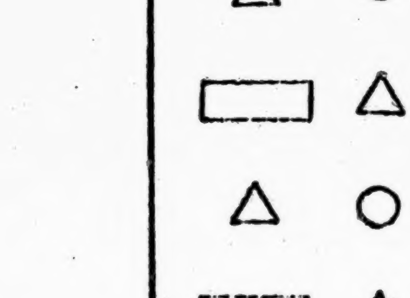
WRITE THE CARDINAL NUMBER FOR EACH SET: Do not define "cardinal"

11.



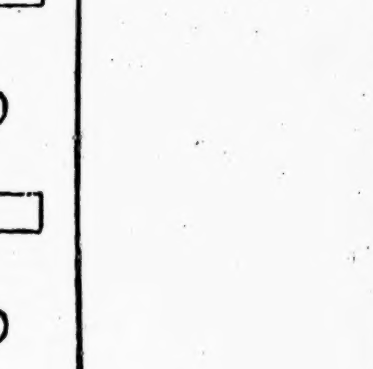
____

12.



____

13.



____

14. Order these numerals from greater than to less than:

2, 5, 7, 4, 9, 6, 0, 3, 8, 1

___, ___, ___, ___, ___, ___, ___, ___, ___, ___

15. Order these numerals less than to greater than:

4, 0, 7, 9, 6, 3, 5, 2, 1, 8

___, ___, ___, ___, ___, ___, ___, ___, ___, ___

16. Order these numerals from greater than to less than:

19, 23, 34, 17, 28, 53, 11

___, ___, ___, ___, ___, ___, ___

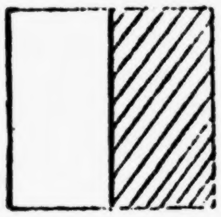
USE THE SYMBOL $<$ OR $>$ TO ORDER THESE PAIRS:

17. 57 __ 53

18. 46 __ 54

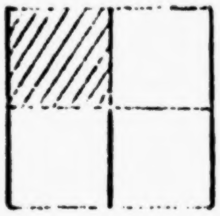
Read the symbols as "less than" and "greater than."

19. Circle the fraction below the box that shows the fractional part of the box that is shaded.



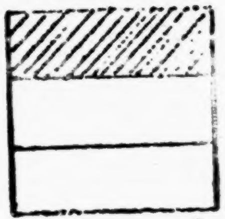
$\frac{1}{4}$ $\frac{1}{3}$ $\frac{1}{2}$

20. Circle the fraction below the box that shows the fractional part of the box that is shaded.



$\frac{1}{4}$ $\frac{1}{3}$ $\frac{1}{2}$

21. Circle the fraction below the box that shows the fractional part of the box that is shaded.

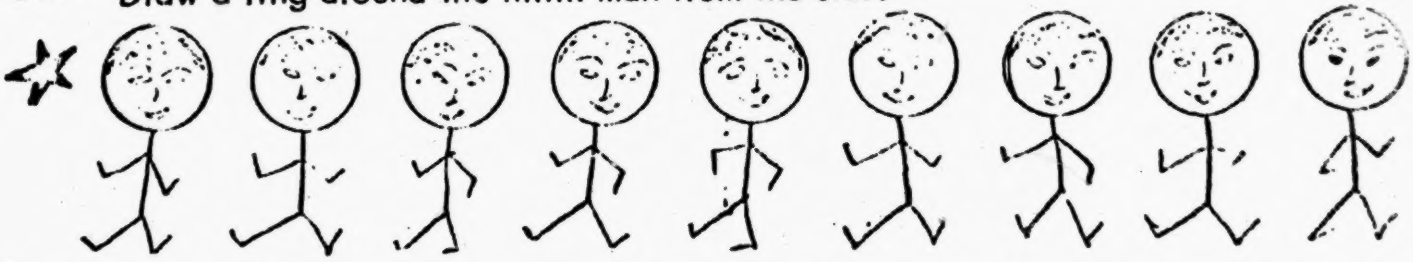


$\frac{1}{4}$ $\frac{1}{2}$ $\frac{1}{3}$

* * *

22. Put an "X" on the fifth man from the star.

23. Draw a ring around the ninth man from the star.



PUT "X" ON EACH NUMERAL BELOW THAT NAMES THE SAME NUMBER AS 5.

24. 4 + 1

25. 2 + 3

26. 6 + 2

27. 7 − 2

COLOR ENOUGH CIRCLES TO MAKE A SET OF:

you may tell them to shade or put in an "X" if you don't have colors.

28. [5] ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

29. [8] ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

30. [10] ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

PUT AN "X" ON THE NUMERAL IN THE TENS' PLACE:

31. 69

32. 127

DRAW A RING AROUND THE NUMERAL IN THE ONES' PLACE:

33. 88

34. 156

MATCH (DRAW LINE SEGMENTS)

35. three
36. five
37. one
38. two
39. four
40. six
41. seven
42. ten
43. eight
44. nine
45. zero

5
1
3
6
7
2
0
4
8
10
9

****

46. Write the expanded numeral for 19

Example: 14 = 10 + 4

47. Write the expanded numeral for 42

Call attention to the example.

****

48. Write the numeral for:

2 tens and 4 ones ______________________________

49. Write the numeral for:

5 tens and 6 ones ______________________________

BESIDE EACH NUMERAL WRITE ITS NUMBER WORD

50. ______________________________ 1

51. ______________________________ 2

52. ______________________________ 3

53. ______________________________ 4

54. ______________________________ 5

55. ______________________________ 6

56. ______________________________ 7

57. ______________________________ 8

58. ______________________________ 9

59. ______________________________ 10

****

60. Draw sets of marbles for this equation:

$5 + 3 = 8$

61. Here is a set of 14 marbles. Draw "X's" on 8 of the marbles.

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

62. How many marbles are left?____________________

63. So we may say 14 − 8 = ____________________

****

64. Here is a set of 6 △'s. Draw enough to make a total of 15 △'s.

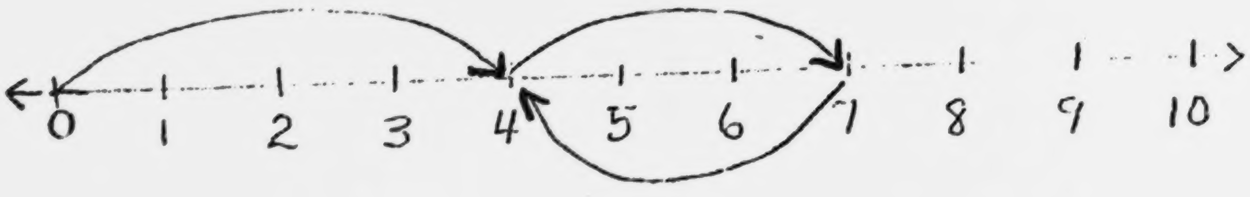
△ △ △ △ △ △

65. How many triangles did you draw?__________

66. So we may say 6 + ______ = 15

****

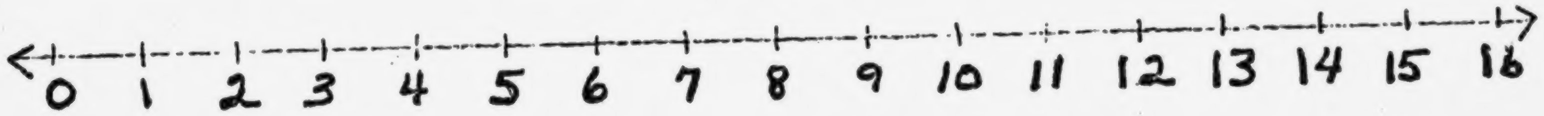
67. Look at this number line.



If 4 + 3 = 7, fill in the blank to make this statement true.

7 ________ = 4

Explain that both an operation symbol and numeral is needed.



USE THE NUMBER LINE ABOVE TO FIND THE DIFFERENCE OR SUM

68. $12 - 8 =$ ____

69. $7 + 8 =$ ____

****

PUT A NUMERAL IN EACH OF THE BOXES TO MAKE THE SENTENCE TRUE:

70. $2 + \square = 5$

71. $5 + \square = 8$

72. $4 + 2 = \square$

73. $10 - 8 = \square$

74. $\square + 4 = 9$

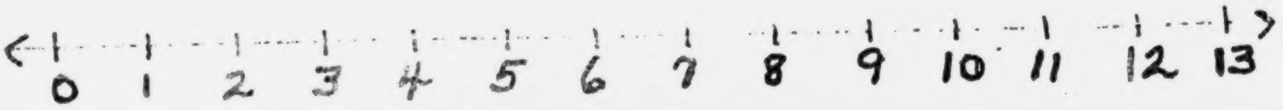
75. $\square - 2 = 6$

****

76. Put the operational sign (+ or —) in the box to make this a true statement.

$$7 \; \square \; 8 = 15$$

77. If $4 + 7 = 11$, does $7 + 4 = 11$?
Circle the right answer. YES NO



78. Use the number line above to find the answer.

$(7+3)+2 = \underline{\quad\quad} + \underline{\quad\quad} = \underline{\quad\quad}$

****

SOLVE THESE PROBLEMS:

79. $0 + 13 = \square$

80. $6 - 6 = \square$

81. $17 + \square = 17$

82. $\begin{array}{r} 2 \\ 3 \\ 1 \\ +4 \\ \hline \end{array}$

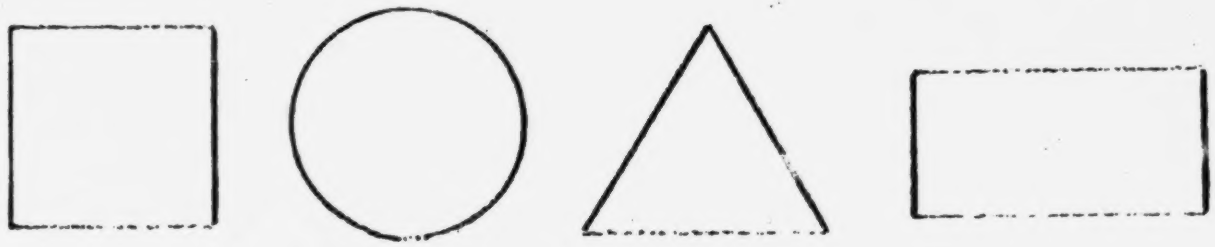
83. $\begin{array}{r} 3 \\ 4 \\ 1 \\ +2 \\ \hline \end{array}$

84. $\begin{array}{r} 12 \\ +21 \\ \hline \end{array}$

85. $\begin{array}{r} 25 \\ -12 \\ \hline \end{array}$

****

86.
87.
88.
89.



Put a "1" in the circle

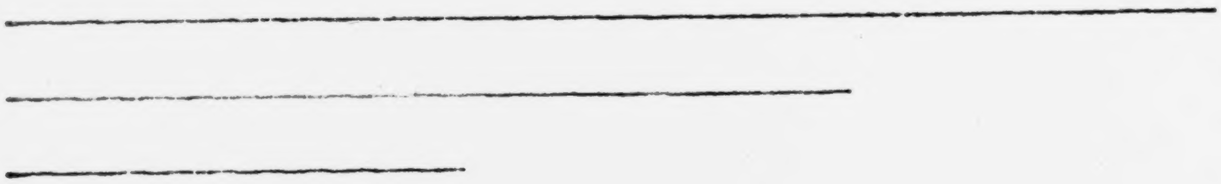
Put a "2" in the rectangle

Put a "3" in the square

Put a "4" in the triangle

90. Using the 3 line segments below, put an "X" on the longest line segment.

91. Using the 3 line segments below, put an "O" on the shortest line segment.



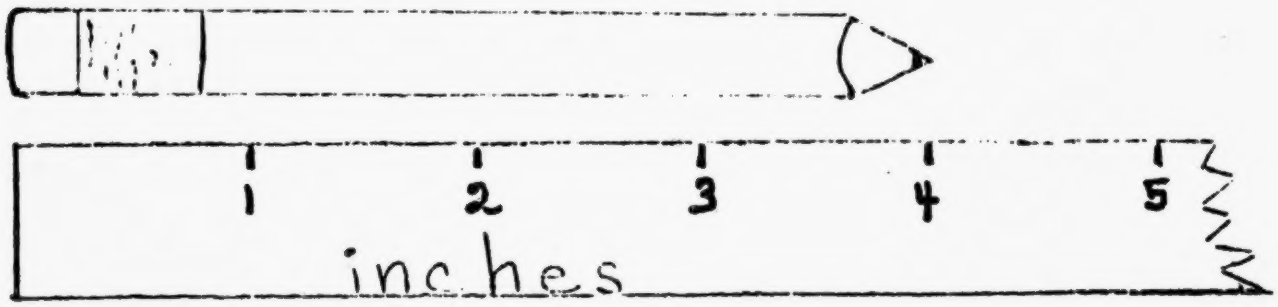
****

92. Draw a square.

93. Draw a rectangle.

94. Draw a triangle.

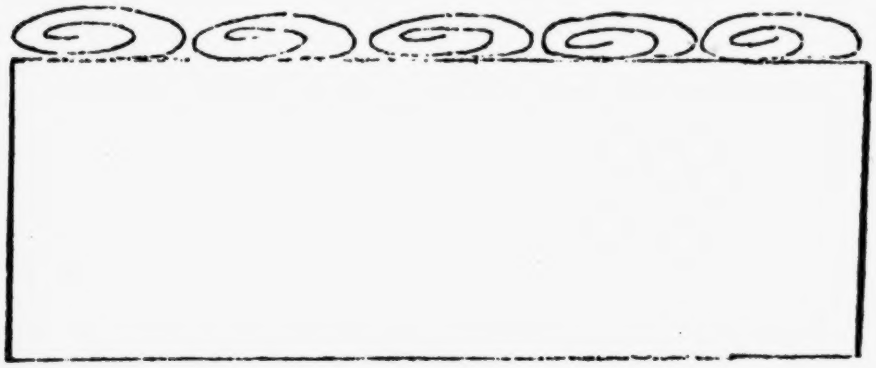
95. Draw a circle.

96. 
1
2
3
4
5
inches

Look at the picture of the pencil and the ruler. How many inches long is the pencil?

____

****

97. 

Look at the picture of the box and paper clips.

How many paper clips long is the box? __________

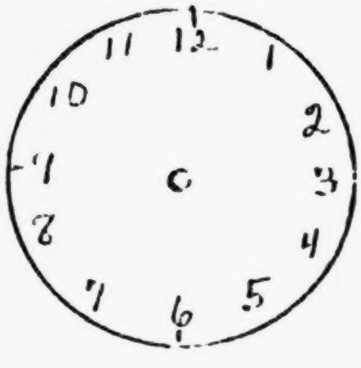
****

98. If a pint holds 2 cups, is 3 cups more or less than a pint? Draw a ring around the correct answer.

MORE LESS

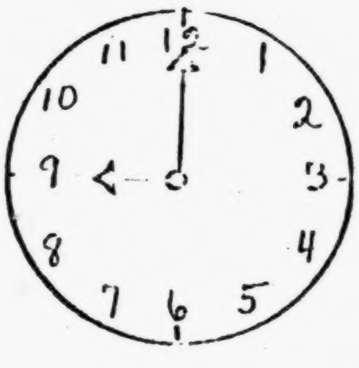
****

99. Draw the hands to show the time that is written under the clock.


12
1
2
3
4
5
6
7
8
9
10
11

3:00

100. Look at the picture of the clock. What time is it?

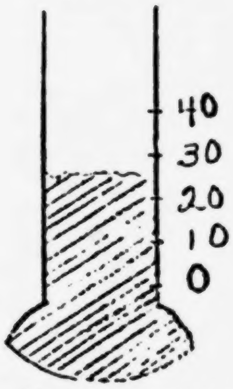

12
1
2
3
4
5
6
7
8
9
10
11

____

101. Dana had two dimes. He spent one dime for ice cream. He needs 2¢ more to buy a top. What does the top cost?

____

102.



Look at the picture of the thermometer.
The temperature is between

__________ and __________

degrees.

103. Crayons cost 25¢.

Cathy has 2 dimes and a nickel.

Susan has 1 dime and 2 pennies.

Put an "X" on the name of the girl who can buy the crayons.

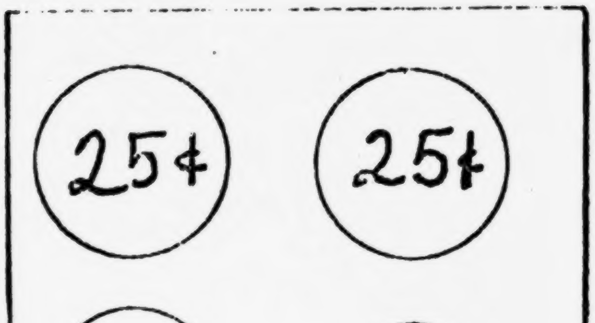
Cathy   Susan

* * *

Count the money in each box.

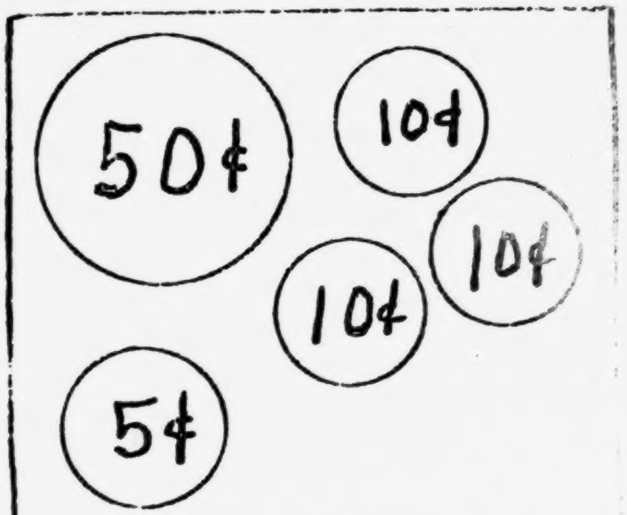
Write the amount on the line below the box.

104.



____________¢

105.



____________¢

MATHEMATICS CONCEPTS TEST

Basic Test: Level One

Part II - Timed

Name Last	First	Middle
Teacher	School	Grade
Date	Test Score -- Part II	

DIRECTIONS TO STUDENTS

1. Write your name and other information on the top of this sheet.
2. Write your answers on the test booklet.

Place test [illegible] face [illegible] on each student's desk. At your signal they may turn the papers over and start working. [illegible] to call time at exactly 3 minutes.

Addition Test   Time Limit: 3 min

0 + 3	1 + 1	1 + 2	3 + 1	4 + 1
2 + 2	7 + 1	4 + 0	3 + 2	4 + 4
4 + 3	2 + 8	5 + 1	5 + 4	3 + 6
1 + 6	6 + 2	3 + 3	5 + 2	1 + 9
8 + 1	4 + 5	5 + 3	2 + 4	7 + 3
6 + 4	10 + 0	5 + 5	0 + 0	3 + 4

use the same procedure as used for the addition test except for the 2 minute time limit

Subtraction Test

Time Limit: 2 min.

$$\begin{array}{r} 9 \\ -0 \\ \hline \end{array} \qquad \begin{array}{r} 1 \\ -1 \\ \hline \end{array} \qquad \begin{array}{r} 3 \\ -2 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ -4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -3 \\ \hline \end{array} \qquad \begin{array}{r} 2 \\ -2 \\ \hline \end{array} \qquad \begin{array}{r} 2 \\ -1 \\ \hline \end{array} \qquad \begin{array}{r} 4 \\ -2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ -4 \\ \hline \end{array} \qquad \begin{array}{r} 9 \\ -7 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ -3 \\ \hline \end{array} \qquad \begin{array}{r} 8 \\ -6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -6 \\ \hline \end{array} \qquad \begin{array}{r} 10 \\ -5 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ -4 \\ \hline \end{array} \qquad \begin{array}{r} 9 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ -1 \\ \hline \end{array} \qquad \begin{array}{r} 5 \\ -3 \\ \hline \end{array} \qquad \begin{array}{r} 10 \\ -6 \\ \hline \end{array} \qquad \begin{array}{r} 10 \\ -3 \\ \hline \end{array}$$

ANSWER KEY

PART I	105 items	12 pages
TIMED TESTS	50 items	2 pages
TOTAL	155 items	

MATHEMATICS CONCEPTS TEST

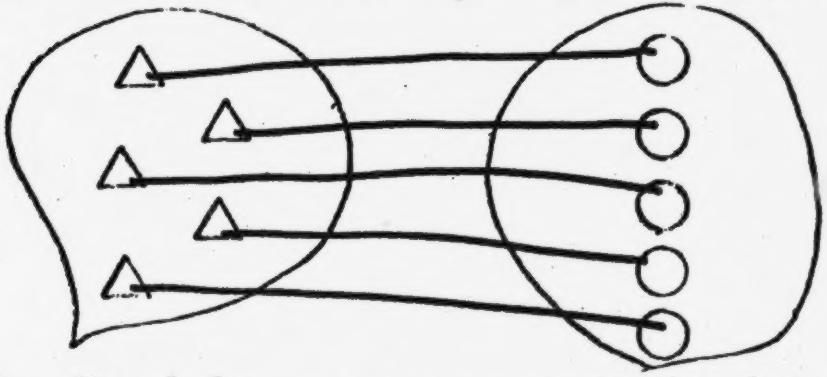
Basic Test: Level One

1. Look at this set of numerals. Draw a ring around the object which is not a member of the set of numerals.

{1, 2, 3, 4, [✓ M], 5, 6}

****

2. Are these sets equivalent? Circle the answer. YES NO

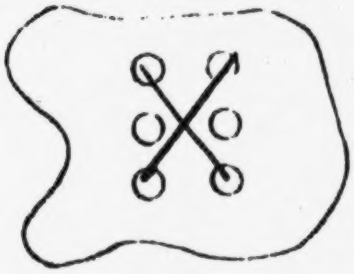


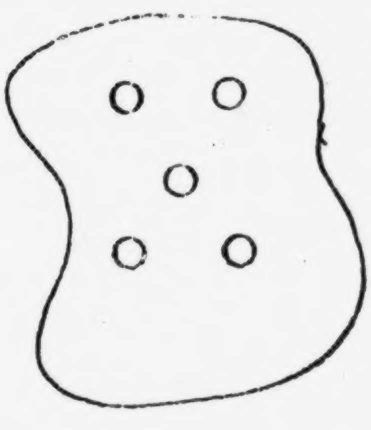
any 1 to 1 matchin
is correct.

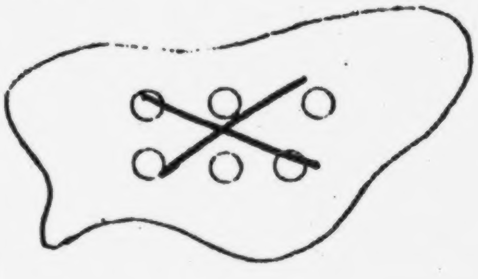
3. Match by one-to-one correspondence to check your answer to the question in number 2 above.

****

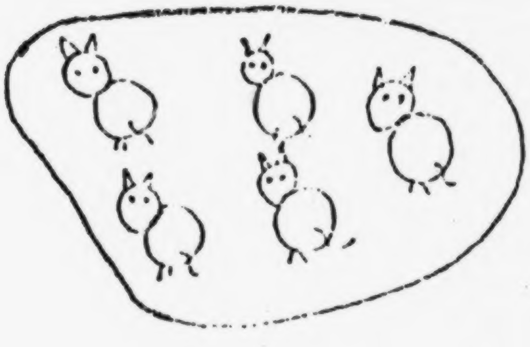
4. Put an "X" on each of the two equivalent sets.

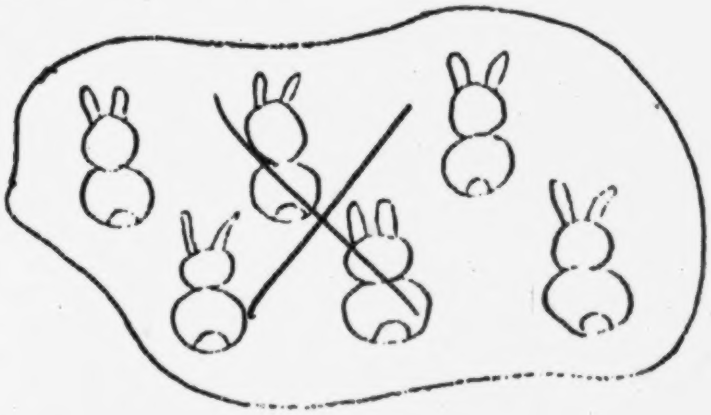




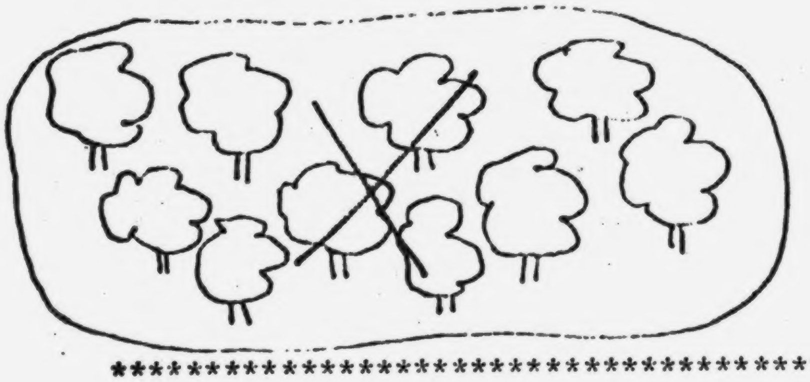


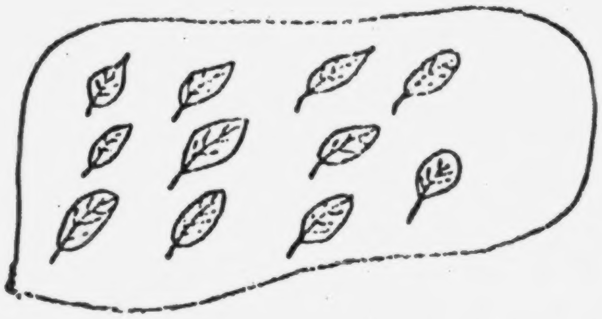
5. Put an "X" on the set that has more members.





6. Put an "X" on the set that has less or fewer members.





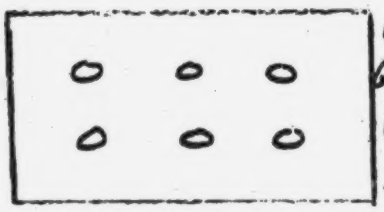
* * *

7. How many members are there in the set of elephants on the ceiling of this room?

0

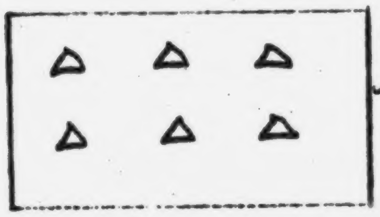
MAKE THREE SUBSETS FROM THE SET AT THE RIGHT:

8. The set of O's



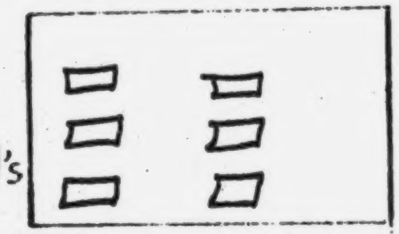
Any arrangement within a box is correct.

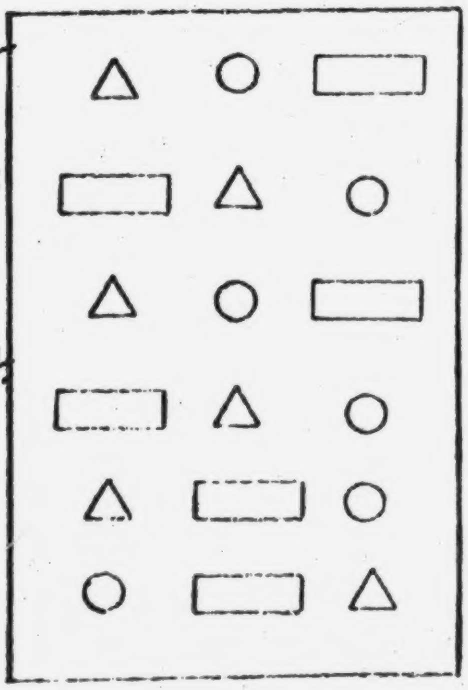
9. The set of △'s



Only the number is important.

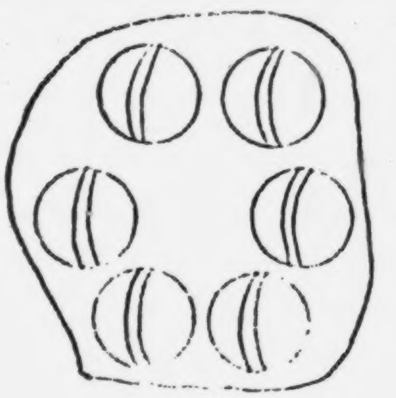
10. The set of ▭'s





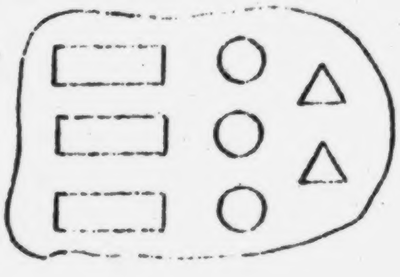
WRITE THE CARDINAL NUMBER FOR EACH SET:

11.



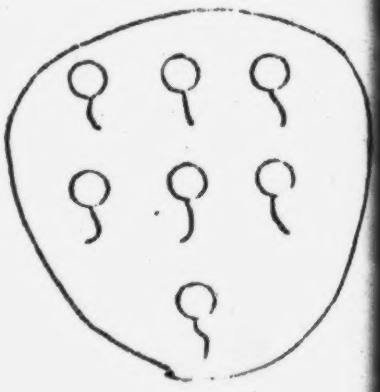
6

12.



8

13.



7

e numeral
isplaced
akes
the item
rong.

14. Order these numerals from greater than to less than:

2, 5, 7, 4, 9, 6, 0, 3, 8, 1

9, 8, 7, 6, 5, 4, 3, 2, 1, 0

15. Order these numerals less than to greater than:

4, 0, 7, 9, 6, 3, 5, 2, 1, 8

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

16. Order these numerals from greater than to less than:

19, 23, 34, 17, 28, 53, 11

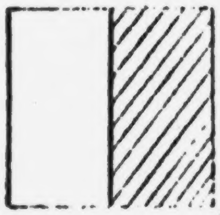
53, 34, 28, 23, 19, 17, 11

USE THE SYMBOL < OR > TO ORDER THESE PAIRS:

17. $57 > 53$

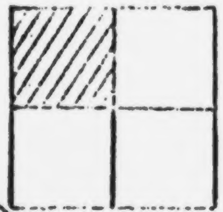
18. $46 < 54$

19. Circle the fraction below the box that shows the fractional part of the box that is shaded.



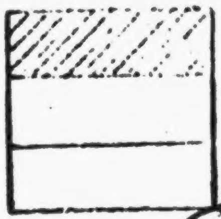
$\frac{1}{4}$ $\frac{1}{3}$ [✓ $\frac{1}{2}$]

20. Circle the fraction below the box that shows the fractional part of the box that is shaded.



[✓ $\frac{1}{4}$] $\frac{1}{3}$ $\frac{1}{2}$

21. Circle the fraction below the box that shows the fractional part of the box that is shaded.

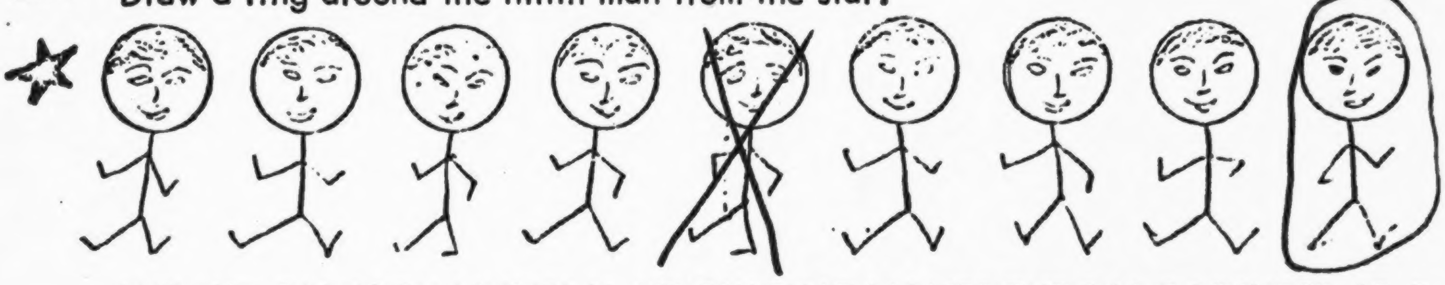


$\frac{1}{4}$ $\frac{1}{2}$ [✓ $\frac{1}{3}$]

****

22. Put an "X" on the fifth man from the star.

23. Draw a ring around the ninth man from the star.



PUT "X" ON EACH NUMERAL BELOW THAT NAMES THE SAME NUMBER AS 5.

24. ~~4 + 1~~

25. ~~2 + 3~~

26. 6 + 2

27. ~~7 − 2~~

COLOR ENOUGH CIRCLES TO MAKE A SET OF:

Which 5 or 8 colored is unimportant.

28. 5 ● ● ● ● ● ○ ○ ○ ○ ○

29. 8 ● ● ● ● ● ● ● ● ○ ○

30. 10 ● ● ● ● ● ● ● ● ● ●

PUT AN "X" ON THE NUMERAL IN THE TENS' PLACE:

31. ~~6~~9

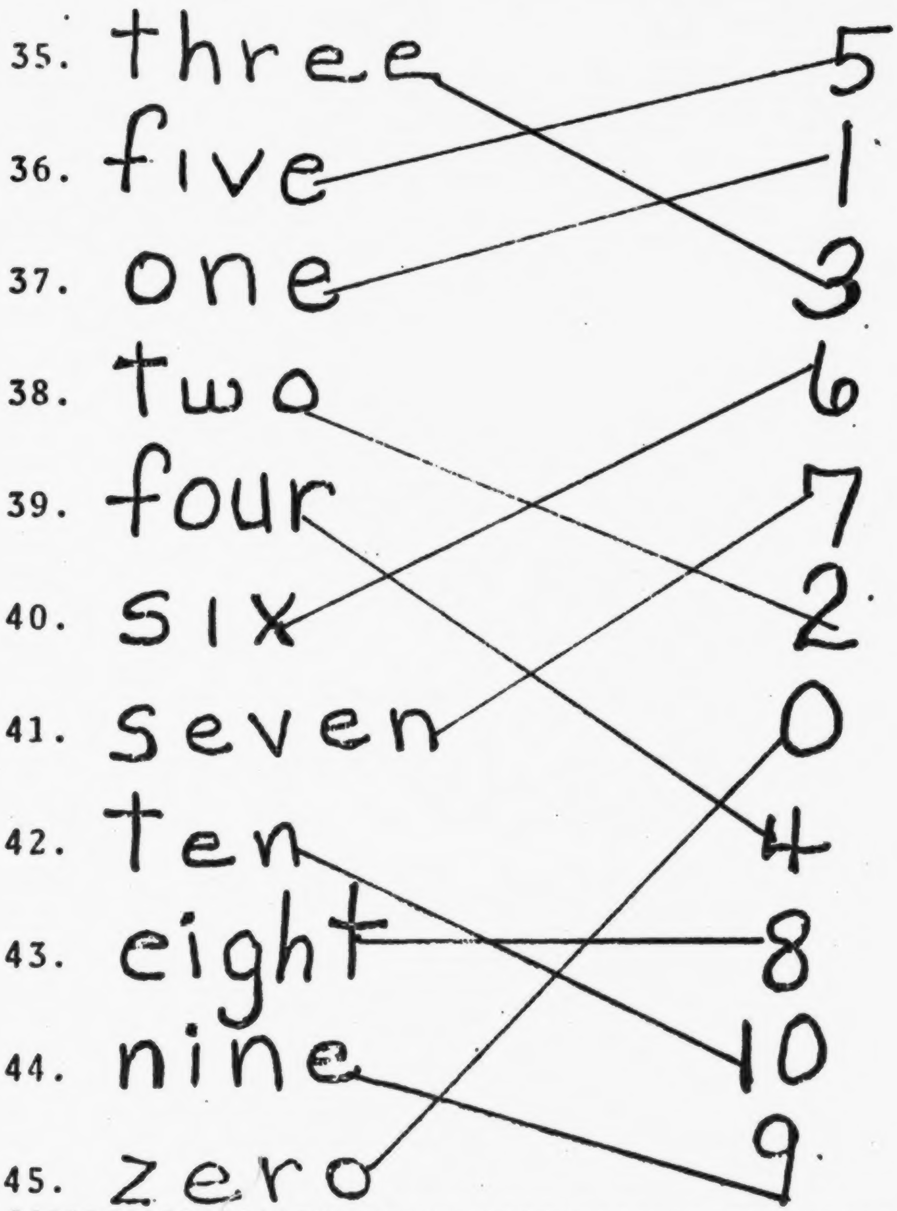
32. 1~~2~~7

DRAW A RING AROUND THE NUMERAL IN THE ONES' PLACE:

33. 8⑧

34. 15⑥

MATCH (DRAW LINE SEGMENTS)



35.	three	5
36.	five	1
37.	one	3
38.	two	6
39.	four	7
40.	six	2
41.	seven	0
42.	ten	4
43.	eight	8
44.	nine	10
45.	zero	9

****

It is correct
with or
without the
equal sign.

46. Write the expanded numeral for 19 = 10+9

Example: 14 = 10+4

47. Write the expanded numeral for 42 = 40+2

****

48. Write the numeral for:

2 tens and 4 ones 24

49. Write the numeral for:

5 tens and 6 ones 56

BESIDE EACH NUMERAL WRITE ITS NUMBER WORD

50. one 1

51. two 2

52. three 3

53. four 4

54. five 5

55. six 6

56. seven 7

57. eight 8

58. nine 9

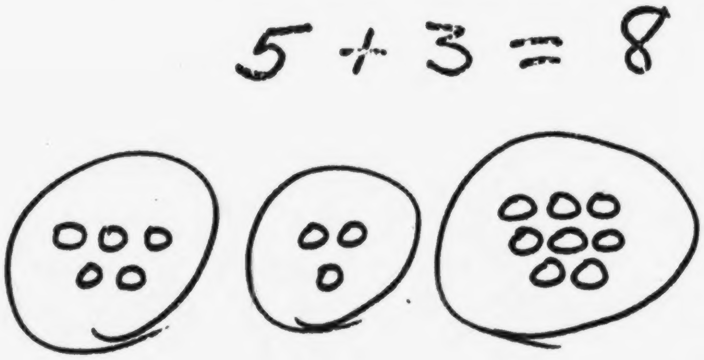
59. ten 10

- Spelling must be correct.

* * *

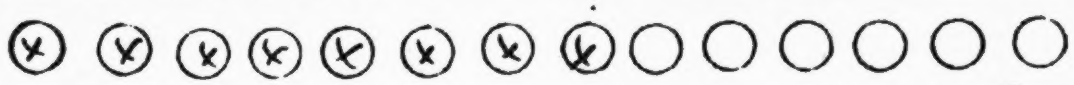
60. Draw sets of marbles for this equation:

5 + 3 = 8



It is correct with o
without rings. The
arrangement of ma
within each set is
unimportant. The
number of marbles
in each set is the
only thing of import

61. Here is a set of 14 marbles. Draw "X's" on 8 of the marbles.



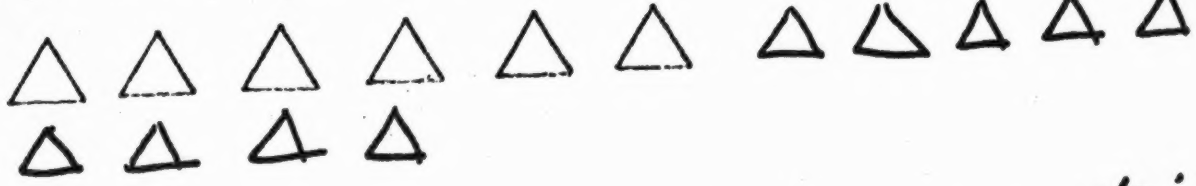
Any 8 circles may be crossed out.

62. How many marbles are left? 6

63. So we may say 14 − 8 = 6

****

64. Here is a set of 6 △'s. Draw enough to make a total of 15 △'s.



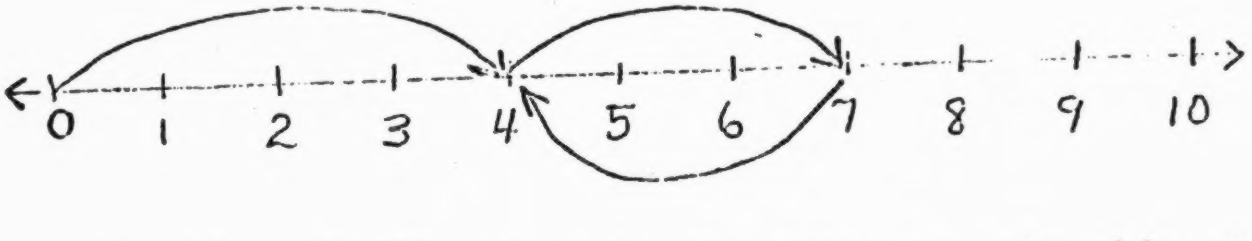
Any arrangement of 9 more triangl
is correct.

65. How many triangles did you draw? 9

66. So we may say 6 + 9 = 15

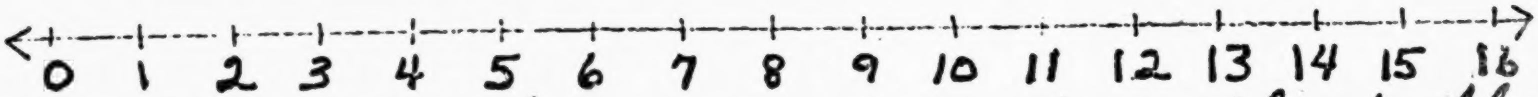
****

67. Look at this number line.



If 4 + 3 = 7, fill in the blank to make this statement true.

7 − 3 = 4



Do Not count these wrong if the pupil gets the answer right but doesn't show any work on th

USE THE NUMBER LINE ABOVE TO FIND THE DIFFERENCE OR SUM # li

68. $12 - 8 = \underline{4}$

69. $7 + 8 = \underline{15}$

****

PUT A NUMERAL IN EACH OF THE BOXES TO MAKE THE SENTENCE TRUE

70. $2 + \boxed{3} = 5$

71. $5 + \boxed{3} = 8$

72. $4 + 2 = \boxed{6}$

73. $10 - 8 = \boxed{2}$

74. $\boxed{5} + 4 = 9$

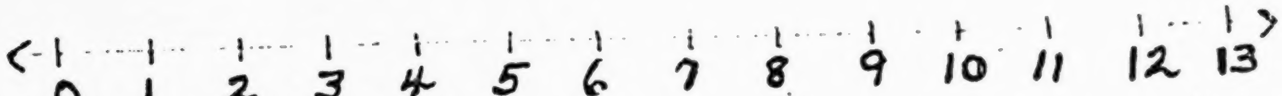
75. $\boxed{8} - 2 = 6$

****

76. Put the operational sign (+ or —) in the box to make this a true statement.

$$7 \boxed{+} 8 = 15$$

77. If $4 + 7 = 11$, does $7 + 4 = 11$?
Circle the right answer. [✓ YES] NO



See comment on item numbers 68 and 69.

78. Use the number line above to find the answer.

$$(7+3)+2 = \underline{10} + \underline{2} = \underline{12}$$

****

SOLVE THESE PROBLEMS:

79. $0 + 13 = \boxed{13}$

80. $6 - 6 = \boxed{0}$

81. $17 + \boxed{0} = 17$

82. $\begin{array}{r} 2 \\ 3 \\ 1 \\ +4 \\ \hline 10 \end{array}$

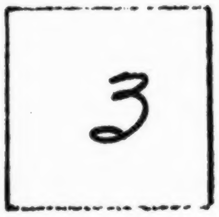
83. $\begin{array}{r} 3 \\ 4 \\ 1 \\ +2 \\ \hline 10 \end{array}$

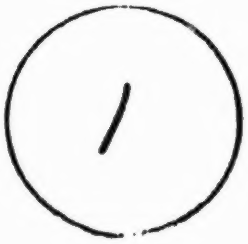
84. $\begin{array}{r} 12 \\ +21 \\ \hline 33 \end{array}$

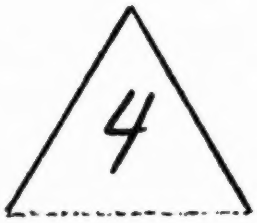
85. $\begin{array}{r} 25 \\ -12 \\ \hline 13 \end{array}$

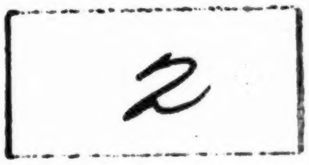
****

86.
87.
88.
89.









Put a "1" in the circle

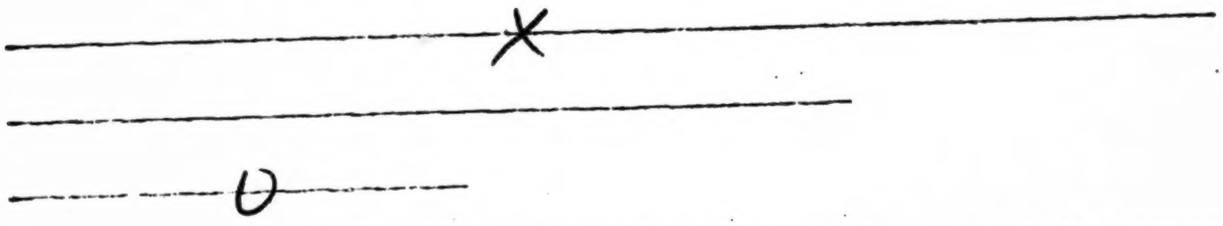
Put a "2" in the rectangle

Put a "3" in the square

Put a "4" in the triangle

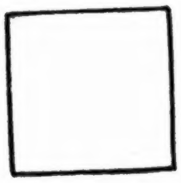
90. Using the 3 line segments below, put an "X" on the longest line segment.

91. Using the 3 line segments below, put an "O" on the shortest line segment.



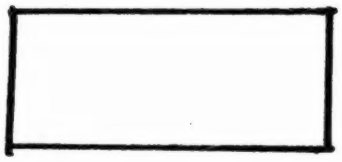
* * *

92. Draw a square.

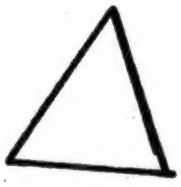


For items 92-95, any "reasonably recognizable" figure is acceptable.

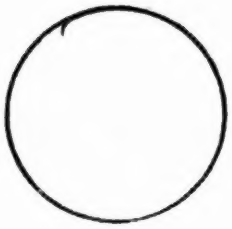
93. Draw a rectangle.



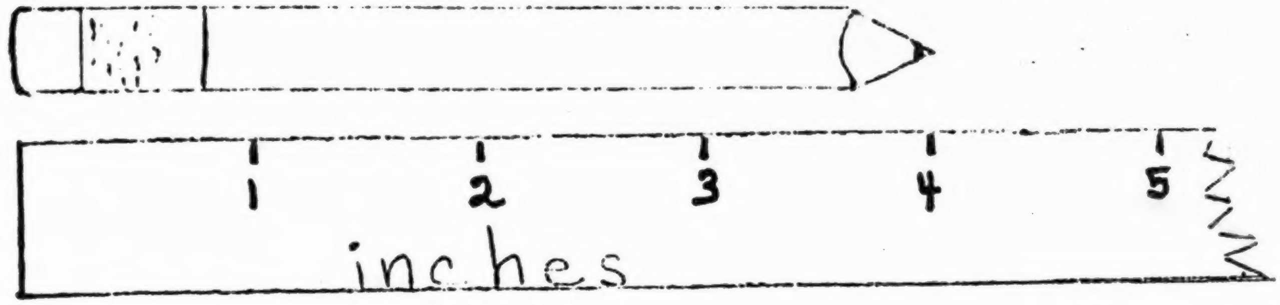
94. Draw a triangle.



95. Draw a circle.



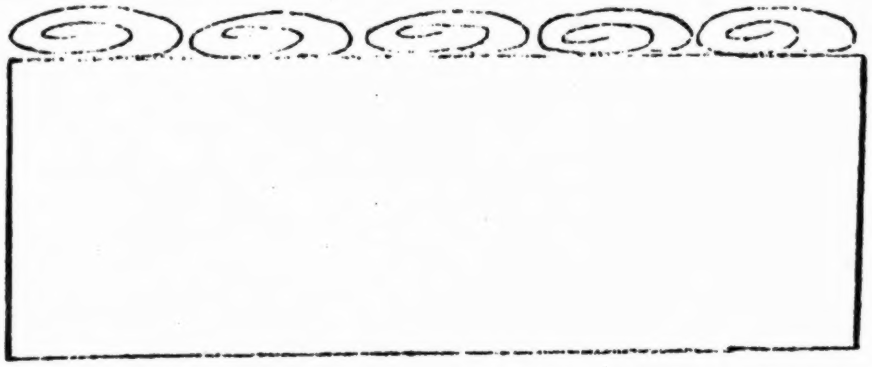
96.


1
2
3
4
5
inches

Look at the picture of the pencil and the ruler. How many inches long is the pencil? 4

* * *

97.



Look at the picture of the box and paper clips.

How many paper clips long is the box? 5

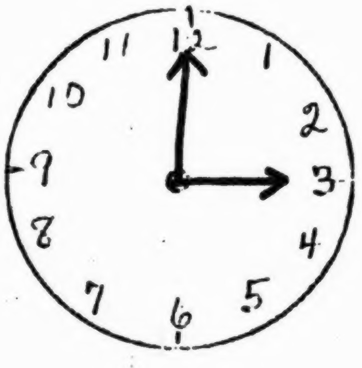
* * *

98. If a pint holds 2 cups, is 3 cups more or less than a pint? Draw a ring around the correct answer.

[✓ MORE] LESS

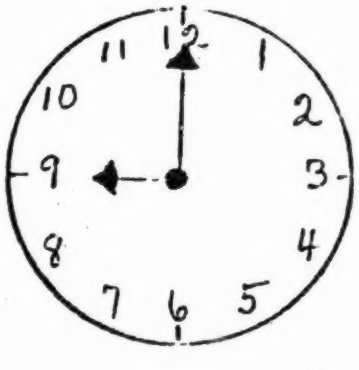
* * *

99. Draw the hands to show the time that is written under the clock.


12
1
2
3
4
5
6
7
8
9
10
11

3:00

100. Look at the picture of the clock. What time is it?

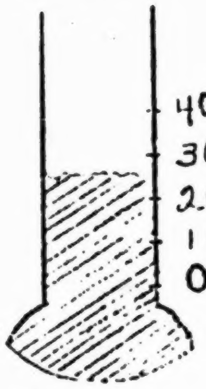

12
1
2
3
4
5
6
7
8
9
10
11

9:00

101. Dana had two dimes. He spent one dime for ice cream. He needs 2¢ more to buy a top. What does the top cost?

12¢

102.



Look at the picture of the thermometer.
The temperature is between

20 and 30

degrees or, other acceptable answers are:
0 and 40
0 and 30
10 and 40
20 and 40
10 and 30

103. Crayons cost 25¢.

Cathy has 2 dimes and a nickel.

Susan has 1 dime and 2 pennies.

Put an "X" on the name of the girl who can buy the crayons.

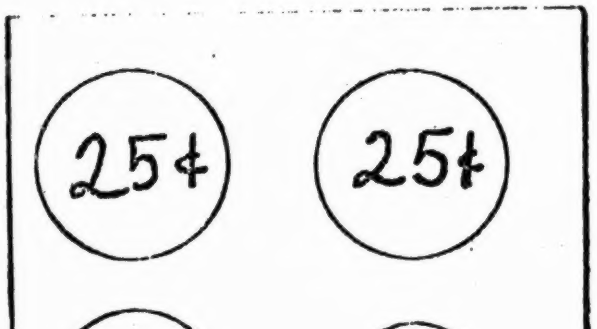
[✓ Cathy]   Susan

****

Count the money in each box.

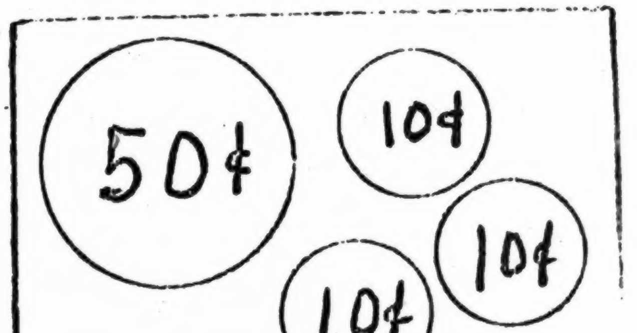
Write the amount on the line below the box.

104.



65 ¢

105.



85 ¢

Addition Test Time Limit: 3 min.

$$\begin{array}{r} 0 \\ +3 \\ \hline 3 \end{array} \qquad \begin{array}{r} 1 \\ +1 \\ \hline 2 \end{array} \qquad \begin{array}{r} 1 \\ +2 \\ \hline 3 \end{array} \qquad \begin{array}{r} 3 \\ +1 \\ \hline 4 \end{array} \qquad \begin{array}{r} 4 \\ +1 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 2 \\ +2 \\ \hline 4 \end{array} \qquad \begin{array}{r} 7 \\ +1 \\ \hline 8 \end{array} \qquad \begin{array}{r} 4 \\ +0 \\ \hline 4 \end{array} \qquad \begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array} \qquad \begin{array}{r} 4 \\ +4 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 4 \\ +3 \\ \hline 7 \end{array} \qquad \begin{array}{r} 2 \\ +8 \\ \hline 10 \end{array} \qquad \begin{array}{r} 5 \\ +1 \\ \hline 6 \end{array} \qquad \begin{array}{r} 5 \\ +4 \\ \hline 9 \end{array} \qquad \begin{array}{r} 3 \\ +6 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 1 \\ +6 \\ \hline 7 \end{array} \qquad \begin{array}{r} 6 \\ +2 \\ \hline 8 \end{array} \qquad \begin{array}{r} 3 \\ +3 \\ \hline 6 \end{array} \qquad \begin{array}{r} 5 \\ +2 \\ \hline 7 \end{array} \qquad \begin{array}{r} 1 \\ +9 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 8 \\ +1 \\ \hline 9 \end{array} \qquad \begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array} \qquad \begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array} \qquad \begin{array}{r} 2 \\ +4 \\ \hline 6 \end{array} \qquad \begin{array}{r} 7 \\ +3 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 6 \\ +4 \\ \hline 10 \end{array} \qquad \begin{array}{r} 10 \\ +0 \\ \hline 10 \end{array} \qquad \begin{array}{r} 5 \\ +5 \\ \hline 10 \end{array} \qquad \begin{array}{r} 0 \\ +0 \\ \hline 0 \end{array} \qquad \begin{array}{r} 3 \\ +4 \\ \hline 7 \end{array}$$

Subtraction Test Time Limit: 2 min.

$$\begin{array}{r} 9 \\ -0 \\ \hline 9 \end{array} \qquad \begin{array}{r} 1 \\ -1 \\ \hline 0 \end{array} \qquad \begin{array}{r} 3 \\ -2 \\ \hline 1 \end{array} \qquad \begin{array}{r} 6 \\ -4 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 8 \\ -3 \\ \hline 5 \end{array} \qquad \begin{array}{r} 2 \\ -2 \\ \hline 0 \end{array} \qquad \begin{array}{r} 2 \\ -1 \\ \hline 1 \end{array} \qquad \begin{array}{r} 4 \\ -2 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 8 \\ -4 \\ \hline 4 \end{array} \qquad \begin{array}{r} 9 \\ -7 \\ \hline 2 \end{array} \qquad \begin{array}{r} 7 \\ -3 \\ \hline 4 \end{array} \qquad \begin{array}{r} 8 \\ -6 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 9 \\ -6 \\ \hline 3 \end{array} \qquad \begin{array}{r} 10 \\ -5 \\ \hline 5 \end{array} \qquad \begin{array}{r} 7 \\ -4 \\ \hline 3 \end{array} \qquad \begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 9 \\ -1 \\ \hline 8 \end{array} \qquad \begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array} \qquad \begin{array}{r} 10 \\ -6 \\ \hline 4 \end{array} \qquad \begin{array}{r} 10 \\ -3 \\ \hline 7 \end{array}$$

MATHEMATICS CONCEPTS TEST

Basic Test: Level Two
(Grade Two)

ANSWER KEY AND TEACHERS' GUIDE

Please read all items to your class. This means the entire class is working on the same item at the same time. Note special comments on certain items. Comments and answers are written in long hand. You should have both the Teachers' Guide and a student copy of the test with you as you administer the test.

Timed Tests: These should not be given with the other part of the test. Timing is extremely important if we are to test the objective as stated in the curriculum guide. Place paper face down on student's desk. At the signal have students turn the paper over and begin working. Be sure to call "stop" in exactly 4 minutes.

This is a 98 problem test, excluding the timed tests. Since some items have more than one answer, the numerals in ( ) have been placed to help you in scoring. You probably will not want to give the entire test in one session. You may use your own judgement concerning where to break it.

A CROSS REFERENCE OF OBJECTIVES FROM THE CLARK COUNTY CURRICULUM GUIDE AND ITEMS IN THE MATHEMATICS COVERAGE TEST

CODE: "N" means number strand; "Nu" means numeration strand; "O" means operations strand; "G" means geometry strand; and, "M" means measurement strand.

An example: M-4 means objective #4 in the measurement strand.

OBJECTIVE #	ITEM #
N-1	1
N-2	2,3
N-3	NC
N-4	4
N-5	5
N-6	6
N-7	7-12
N-8	13-15
N-9	16-18
N-10	19
Nu-1	20
Nu-2	21
Nu-3	22-26
Nu-4	27
Nu-5	28
Nu-6	16-18
O-1	29,30
O-2	31
O-3	32-35
O-4	+ & - facts
O-5	36-44
O-6	32-35
O-7	45
O-8 &O-9	46
O-10	47
O-11	48,49
O-12	50, 52
O-13	51,53

OBJECTIVE #	ITEM #
O-14 & 15	54,55
O-16	56,57
O-17	68,69
O-18 & 19	70,71
O-20 & 21	72-74
G-1	58-63
G-2	64,65
G-3	66,67
G-4	75
G-5	NC
G-6 & 7	76-79
G-8	75
G-9	80
M-1	81
M-2	82
M-3	NC
M-4	83,84
M-5	85
M-6	86
M-7	87
M-8	88-93
M-9	94
M-10	95-98

NC means not covered.

EXAMINER'S GUIDE

Please read every item to the children. Have students read silently while you read aloud. The entire class should work on each item simultaneously. Note special comments on certain items. Comments are written in long hand.

At the end are 2 timed tests. These should not be given with the other part. Timing is extremely important, if we are to test the objective as stated in the curriculum guide. Excluding the timed tests, this is a 98 item test. The test should probably be given in at least two different sessions. You may break it according to your judgement.

MATHEMATICS CONCEPTS TEST

Basic Test: Level Two

Part I

Name ____________ Last ____________ First ____________ Middle

Teacher ____________ School ____________ Grade ____________

Date ____________ Test Score -- Part I ____________

DIRECTIONS TO STUDENTS

1. Write your name and other information on the top of this sheet.
2. Write your answers on the test booklet.

MATHEMATICS CONCEPTS TEST

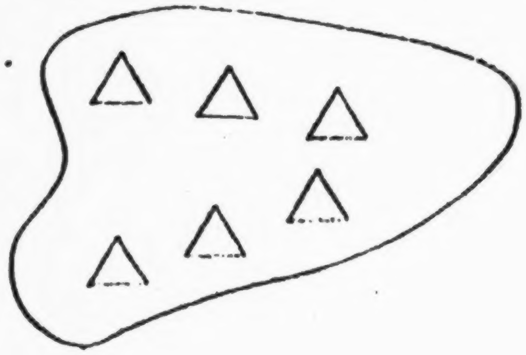
Basic Test: Level Two

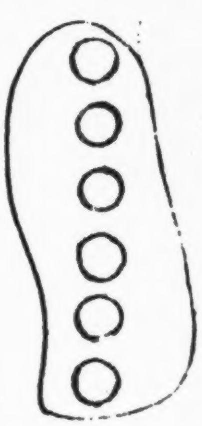
1. Look at this set. Put an "X" on the object which is not a member of the set of letters of the alphabet.

$\{A, C, 5, F, W\}$ Emphasize "not."

* * *

2. Here are two sets.





Are these sets equivalent? Draw a ring around the correct answer.

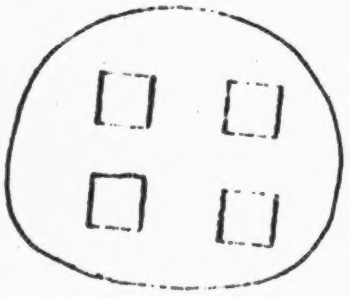
YES NO

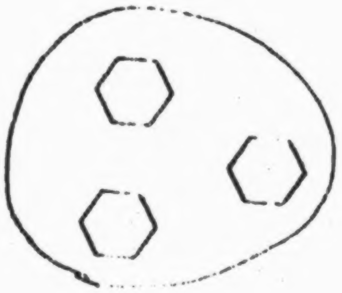
Do not explain "equivalent."

3. Match by one-to-one correspondence to check your answer.

* * *

4. Here are two sets.





Are these sets equivalent? Draw a ring around the correct answer.

YES NO

If you said no, put an "X" on the set that has more members.

5. Read these sentences.

_____ A is the set of live boys in this room.

_____ B is the set of wild foxes in this room

_____ C is the set of girls in this room.

Put an "X" before the one which describes the empty set.

6. From this set, form a subset of the names of girls beginning with the letter S.

{Sue, Jane, Mary, Sally}

Subset = {   }

****

7. By drawing rings around sets of 2, count the number of x's in this set.

X X X X X
X X X X X
X X X X X
X X X X X

8. How many sets of 2 are there?________

9. How many X's are there in all?________

****

10. By drawings rings around sets of 5, count the number of Λ's in this set.

Λ Λ Λ
Λ Λ Λ
Λ Λ Λ
Λ Λ Λ
Λ Λ Λ

11. How many sets of 5 are there?_______

12. How many Λ's are there in all?_______

Write <, > or = in each ○ to make these sentences true.

Read the symbols as "less than," "greater than," and "equal to."

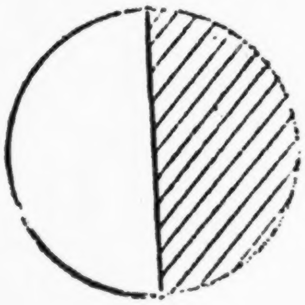
13. 15 + 12 ○ 30

14. 23 ○ 20 + 3

15. 17 + 5 ○ 20

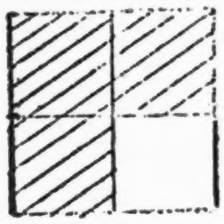
* * *

16. Write the fraction that names the part of the circle that is shaded.



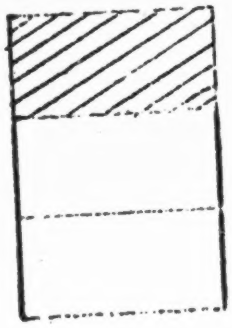
____

17. Write the fraction that names the part of the square that is shaded.



____

18. Write the fraction that names the part of the rectangle that is shaded.



____

19. Look at the word "M A T H E M A T I C S"

What is the tenth letter? ______________________

20. Put an "X" on the numeral which is not another name for 135.

a) 100+30+5

b) 100+20+1.5

c) 100+5+30

d) 100+10+5

21. Write three hundred twenty-four in this box. (a numeral)

☐

MATCH THE NUMERAL WITH THE CORRECT WORD. DRAW A LINE SEGMENT TO CONNECT EACH PAIR.

22. fourteen 17

23. nine 12

24. twenty 14

25. twelve 20

26. seventeen 9

27. In 569, what digit is in the tens' place? ____

Look at this example.

28. EXAMPLE: 853 = 800 + 50 + 3

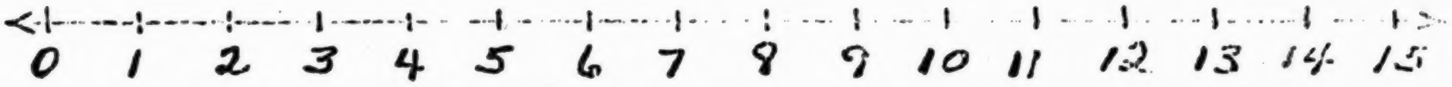
Write the expanded numeral for

749 = ______________________

The number line must be used to get item 30 correct. Arrow heads are necessary. The jumps may be shown above or below the line.

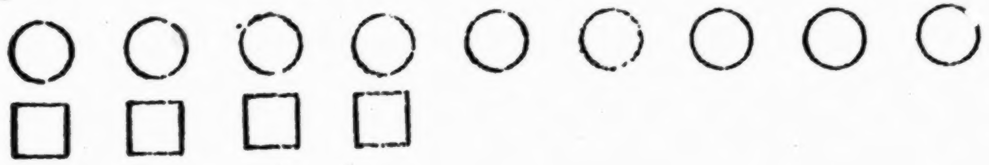
29. Complete the following sentence. 6 + 8 = ☐

30. Show the above problem on this number line.



* * *

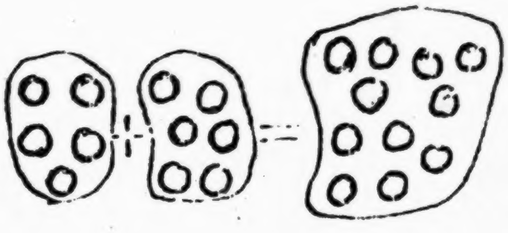
31. Write the number sentence that tells the difference between the number of ○'s and the number of ☐'s.



____

* * *

WRITE TWO ADDITION SENTENCES AND TWO SUBTRACTION SENTENCES RELATED TO THIS MODEL.



32. ______ + ______ = __________

33. ______ + ______ = __________

34. ______ - ______ = __________

35. ______ - ______ = __________

Put + or − in the circle to make these sentences true.

36. 14 ○ 6 = 8

37. 9 ○ 3 = 6

38. 9 ○ 3 = 12

WRITE A NUMERAL IN THE BOX TO MAKE THE FOLLOWING STATEMENTS TRUE.

39. $$\begin{array}{r} 17 \\ -\square \\ \hline 8 \end{array}$$

40. $$\begin{array}{r} 10 \\ +\square \\ \hline 18 \end{array}$$

41. $7 + \square = 15$

42. $\square - 6 = 4$

43. $9 + 5 = \square$

44. $12 - 7 = \square$

45. Complete this sentence.

$2 + 6 = 6 + \_\_\_$

46. $(3 + 2) + 4 = 3 + (\_\_\_ + \_\_\_)$

Hint: ●●● ●● ●●●● = ●●● ●● ●●●●

* * *

IN EACH OF THE FOLLOWING, PUT A NUMERAL IN THE BOX THAT WILL MAKE THE SENTENCE TRUE.

47. $7 + 8 = 10 + \square$

48. $\square + 3 = 3$

49. $7 - \square = 7$

50. Find the sum.

$$\begin{array}{r} 141 \\ 22 \\ +413 \\ \hline \end{array}$$

51. Find the sum.

$$\begin{array}{r} 34 \\ +58 \\ \hline \end{array}$$

52. Find the difference.

$$\begin{array}{r} 247 \\ -123 \\ \hline \end{array}$$

53. Find the difference.

$$\begin{array}{r} 52 \\ -35 \\ \hline \end{array}$$

54. Draw a set model to show the product of $4 \times 3 = \square$

55. Write the name of the product in the box.

****

WRITE A NUMERAL IN THE BLANKS TO MAKE THE FOLLOWING SENTENCES TRUE.

56. $2 \times 4 = \_\_\_ + 4$

57. $6 + 6 + 6 = \_\_\_ \times 6$

Put a "1" in the circle.

Put a "2" in the rectangle.

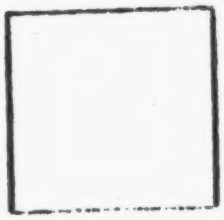
Put a "3" in the square.

Put a "4" in the triangle.

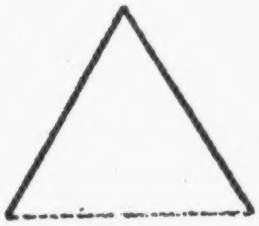
Put a "5" on the line segment.

Put a "6" on the line.

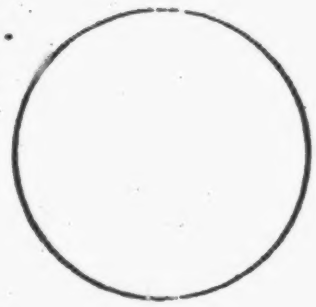
58.



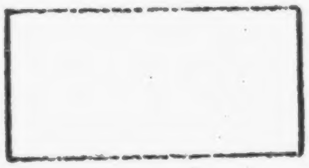
59.



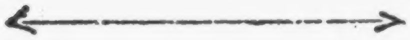
60.



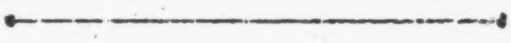
61.



62.



63.

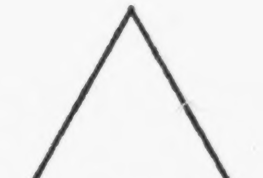


* * *

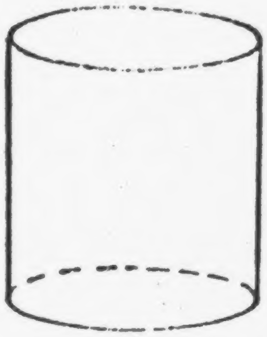
Put an "X" on the cone.

Draw a ring around the cylinder.

64.



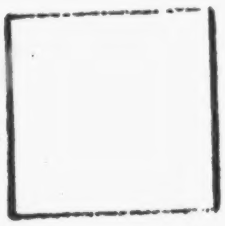
65.



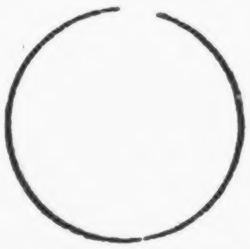
Put an "X" on the plane figure which is not closed.

Put an "I" inside the closed figure.

66.



67.



****

68. Draw rings around subsets of three X's.

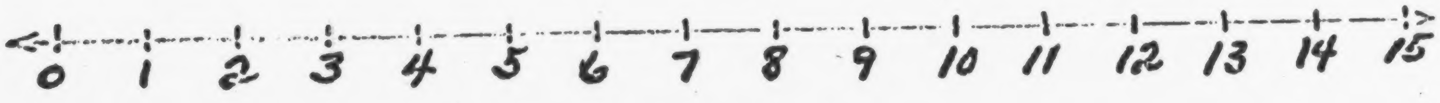
X X X X X
X X X X X
X X X X X

Any set of rings that encircle 3 X's each is correct.

69. Using the above example, complete this sentence: 15 ÷ 3 = ☐

****

70. Above this number line show that 3 X 4 = 12.



71. Below the number line show that 4 X 3 = 12.

****

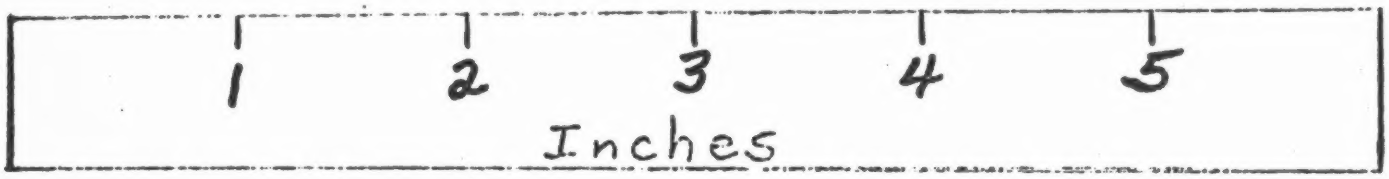
IN EACH OF THE FOLLOWING, PUT A NUMERAL IN THE BOX THAT WILL MAKE THE SENTENCE TRUE.

72. ☐ x 6 = 6

73. 7 x ☐ = 7

74. 0 x 8 = ☐

75. Draw a line segment 2 inches long above this ruler.



76. Draw a square.

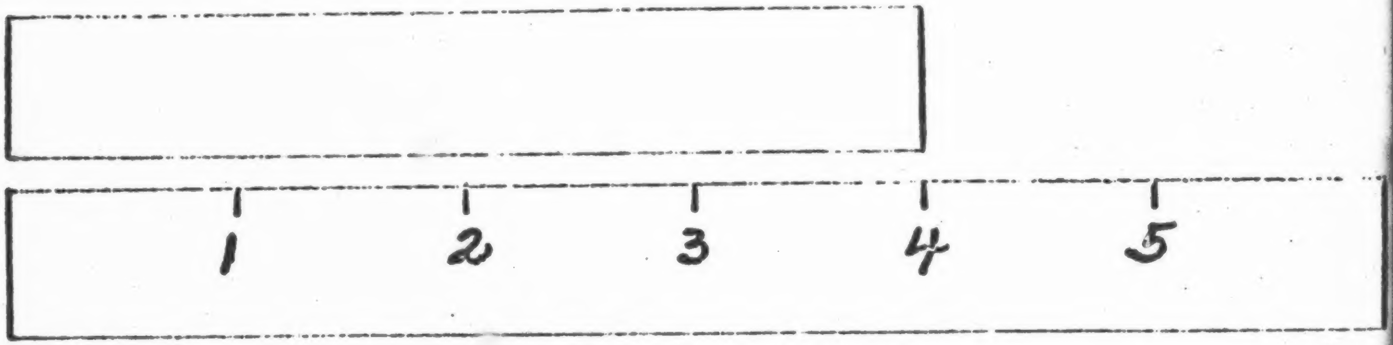
77. Draw a rectangle.

78. Draw a circle.

79. Draw a triangle.

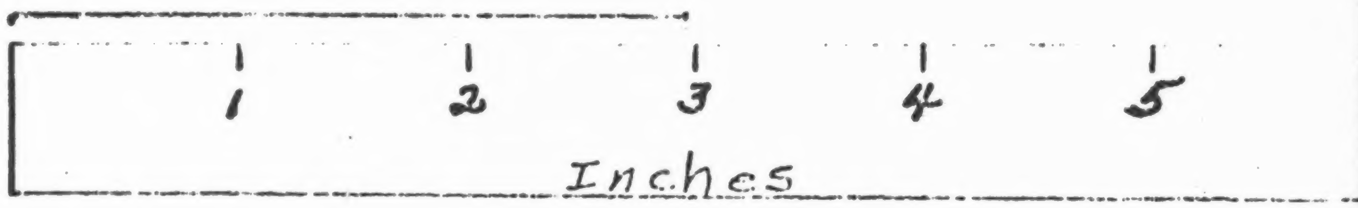
80. Draw a number line showing the numerals 0 through 10.

81.



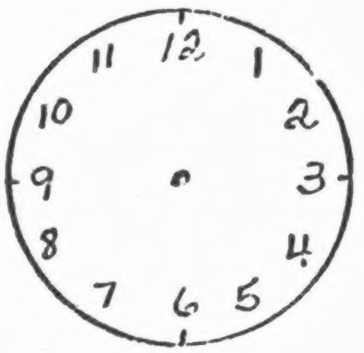
Here is a rectangle and a ruler. The length of this rectangle is 4 (inches, feet, yard). Underline the correct choice.

82.


1
2
3
4
5
Inches

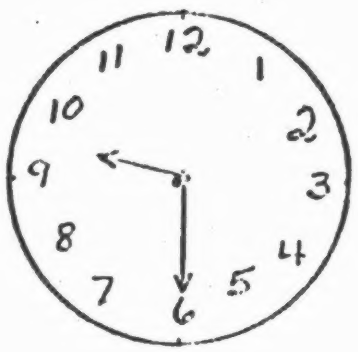
Here is a line segment and a ruler. The length of this line segment is about ________ inches.

83. Draw the hands to show the time that is written under the clock.


12
1
2
3
4
5
6
7
8
9
10
11

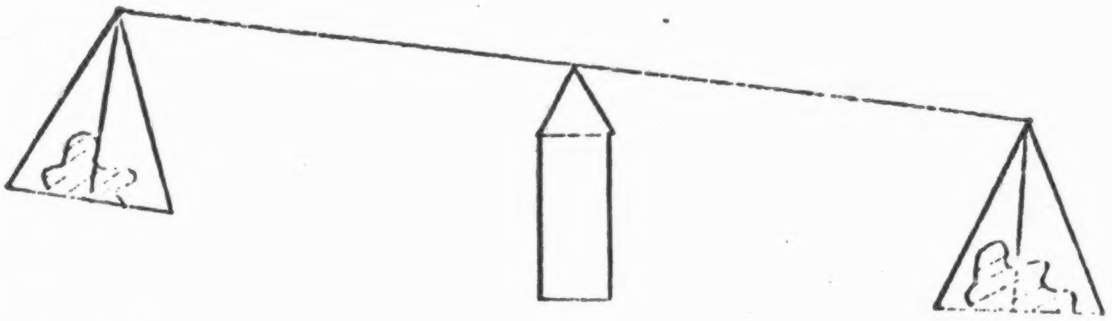
5:00

84. Look at the picture of the clock. What time is it?

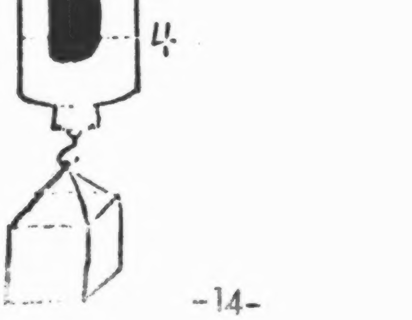

12
1
2
3
4
5
6
7
8
9
10
11

____

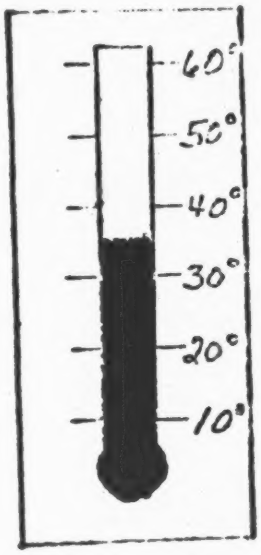
85. Put an "X" on the heaviest object on the balance scale.



86. To the nearest pound, how much does the block weigh?

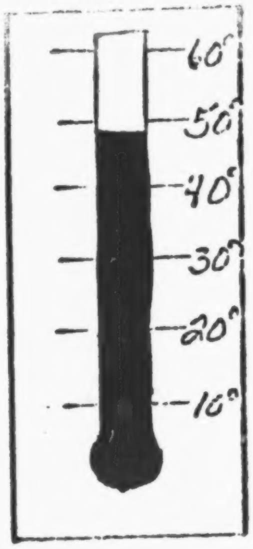

0
1
2
3
4
Pounds

87.



60°
50°
40°
30°
20°
10°

Monday



60°
50°
40°
30°
20°
10°

Tuesday

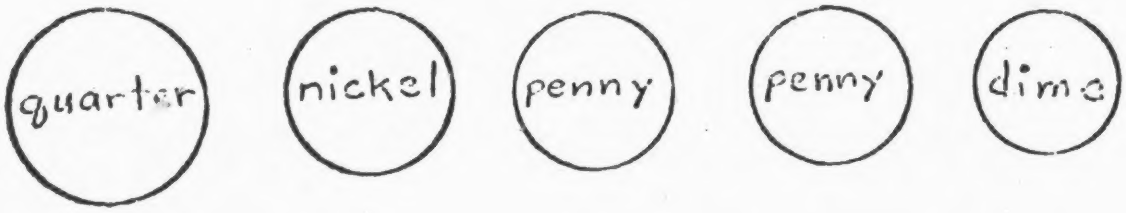
Was it warmer on Monday or Tuesday? Draw a ring around the correct answer.

****

MATCH THE NAME OF EACH COIN WITH ITS VALUE. DRAW A LINE TO CONNECT EACH PAIR.

88.	Penny	10¢
89.	Dime	25¢
90.	Nickel	1¢
91.	Quarter	50¢
92.	Half dollar	5¢

93.



quarter
nickel
penny
penny
dime

The total value of the above coins is ________________.

94. I have 156 cents. Write this amount as dollars and cents.

____

95. 1 half dollar = ________ dimes.

96. 1 dime = ________ pennies.

97. 1 dime = ________ nickels.

98. 60 minutes = ________ hour.

MATHEMATICS CONCEPTS TEST

Basic Test: Level Two

Part II - Timed

Name Last ________ First ________ Middle ________

Teacher ________ School ________ Grade ________

Date ________ Test Score -- Part II ________

DIRECTIONS TO STUDENTS

1. Write your name and other information on the top of this sheet.
2. Write your answers on the test booklet.

Place test paper face down on student's desk. At your signal, they turn the paper over and start working. Be sure to call time at exactly 4 minutes.

Time limit: 4 minutes

ADDITION TEST

5	9	7	6	8	7	3	5
+4	+2	+6	+5	+7	+5	+3	+2

7	8	5	9	8	7	4	6
+1	+2	+5	+4	+6	+0	+8	+9

7	0	2	6	8	4	9	8
+4	+6	+4	+6	+3	+6	+9	+8

5	6	4	3	1	9	7	5
+7	+3	+4	+5	+4	+6	+7	+9

3	2	3	7	4	6	3	2
+7	+2	+9	+2	+3	+8	+2	+8

Use the same procedure as on the addition te

Time limit: 4 minutes

SUBTRACTION TEST

14	12	6	13	11	12	18	8
-9	-7	-4	-8	-6	-3	-9	-4
12	15	10	0	9	13	17	6
-9	-7	-5	-0	-1	-6	-9	-3
9	11	15	13	10	9	3	14
-7	-8	-9	-4	-7	-3	-2	-7
10	12	10	7	8	17	14	11
-3	-5	-9	-5	-2	-8	-5	-4
10	4	9	7	16	8	5	11
-1	-2	-5	-3	-8	-6	-3	-2

ANSWER KEY

PART I	98 items	13 pages
TIMED TESTS	80 items	2 pages
TOTAL	178 items	

MATHEMATICS CONCEPTS TEST

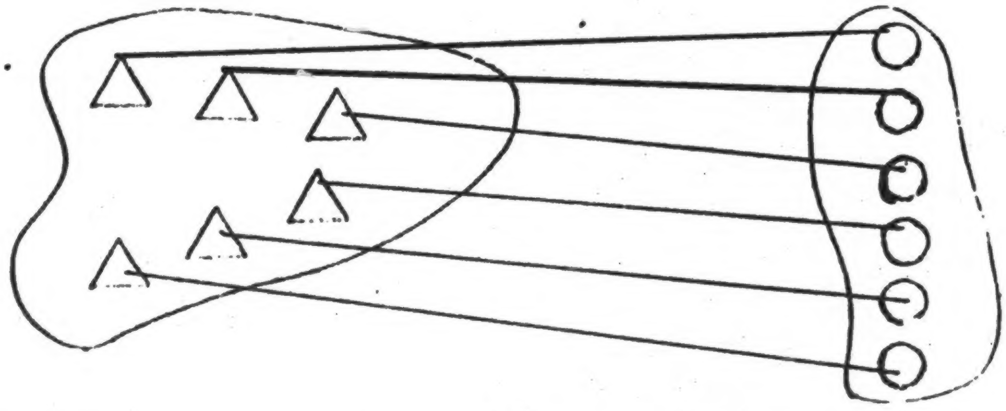
Basic Test: Level Two

1. Look at this set. Put an "X" on the object which is not a member of the set of letters of the alphabet.

{A, C, ~~5~~, F, W}

* * *

2. Here are two sets.



any 1-to-1 matching is correct.

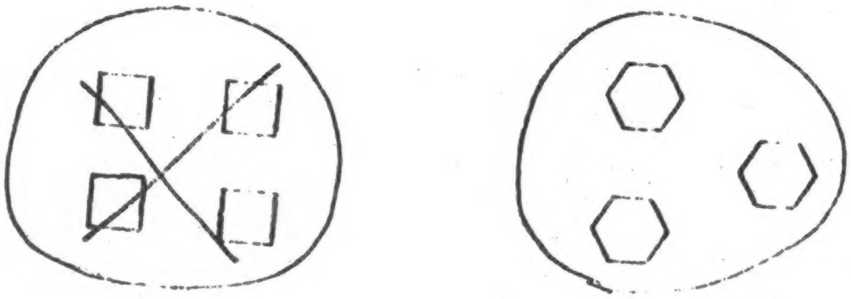
Are these sets equivalent? Draw a ring around the correct answer.

[✓ YES] NO

3. Match by one-to-one correspondence to check your answer.

* * *

4. Here are two sets.



Are these sets equivalent? Draw a ring around the correct answer.

YES [✓ NO]

If you said no, put an "X" on the set that has more members.

If either answer is incorrect, mark the whole item as incorrect.

5. Read these sentences.

_____ A is the set of live boys in this room.

X B is the set of wild foxes in this room

_____ C is the set of girls in this room.

Put an "X" before the one which describes the empty set.

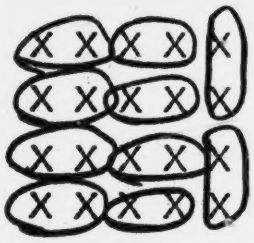
6. From this set, form a subset of the names of girls beginning with the letter S.

{Sue, Jane, Mary, Sally}

Subset = {Sue, Sally or Sally, Sue }

* * *

7. By drawing rings around sets of 2, count the number of x's in this set.



any set of rings that encircle two X's each is correct.

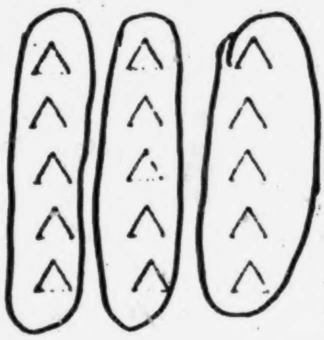
8. How many sets of 2 are there? 10

9. How many X's are there in all? 20

* * *

10. By drawings rings around sets of 5, count the number of △'s in this set.

See note for #7 above.



11. How many sets of 5 are there? 3

12. How many △'s are there in all? 15

Write <, > or = in each ◯ to make these sentenc
true.

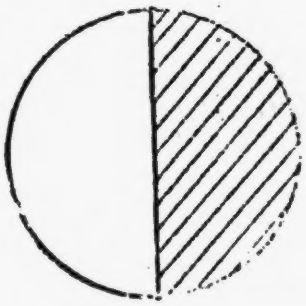
13. 15 + 12 (<) 30

14. 23 (=) 20 + 3

15. 17 + 5 (>) 20

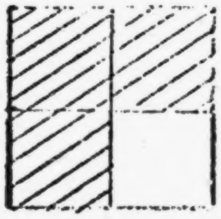
****

16. Write the fraction that names the part of the circle that is shaded.



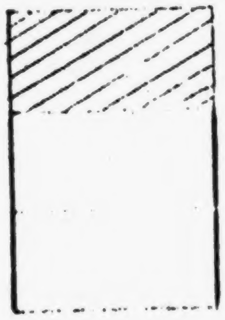
1/2

17. Write the fraction that names the part of the square that is shaded.



3/4

18. Write the fraction that names the part of the rectangle that is shaded.



1/3

19. Look at the word "MATHEMATICS"

What is the tenth letter? C

20. Put an "X" on the numeral which is not another name for 135.

a) 100 + 30 + 5

b) 100 + 20 + 15

c) 100 + 5 + 30

d) ~~100 + 10 + 5~~

21. Write three hundred twenty-four in this box. (a numeral)

324

MATCH THE NUMERAL WITH THE CORRECT WORD. DRAW A LINE SEGMENT TO CONNECT EACH PAIR.

22. fourteen

23. nine

24. twenty

25. twelve

26. seventeen

17

12

14

20

9

27. In 569, what digit is in the tens' place? 6

28. EXAMPLE: 853 = 800 + 50 + 3

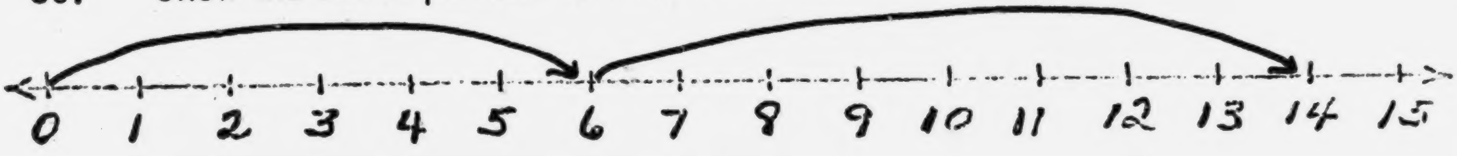
Write the expanded numeral for

749 = 100 + 40 + 9

The number line must be used. Arrowheads are necessary. The jumps may be shown above or below the line.

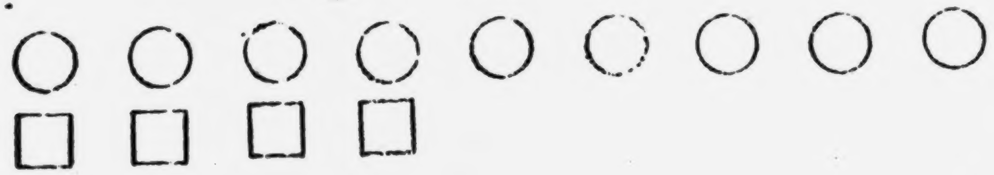
29. Complete the following sentence. $6 + 8 = \boxed{14}$

30. Show the above problem on this number line.



* * *

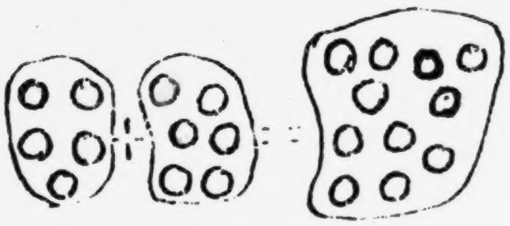
31. Write the number sentence that tells the difference between the number of ○'s and the number of □'s.



9 - 4 = 5 (The sentence must be complete.)

* * *

WRITE TWO ADDITION SENTENCES AND TWO SUBTRACTION SENTENCES RELATED TO THIS MODEL.



32. 5 + 6 = 11

33. 6 + 5 = 11

34. 11 - 6 = 5

35. 11 - 5 = 6

Put + or − in the circle to make these sentences true.

36. $14 \ominus 6 = 8$

37. $9 \ominus 3 = 6$

38. $9 \oplus 3 = 12$

WRITE A NUMERAL IN THE BOX TO MAKE THE FOLLOWING STATEMENTS TRUE.

39. $$\begin{array}{r} 17 \\ -\boxed{9} \\ \hline 8 \end{array}$$

40. $$\begin{array}{r} 10 \\ +\boxed{8} \\ \hline 18 \end{array}$$

41. $7 + \boxed{8} = 15$

42. $\boxed{10} - 6 = 4$

43. $9 + 5 = \boxed{14}$

44. $12 - 7 = \boxed{5}$

45. Complete this sentence.

$2 + 6 = 6 + \underline{2}$

46. $(3 + 2) + 4 = 3 + (\underline{2} + \underline{4})$

Hint: ••• •• •••• = ••• •• ••••

****

IN EACH OF THE FOLLOWING, PUT A NUMERAL IN THE BOX THAT WILL MAKE THE SENTENCE TRUE.

47. $7 + 8 = 10 + \boxed{5}$

48. $\boxed{0} + 3 = 3$

49. $7 - \boxed{0} = 7$

50. Find the sum.

$$\begin{array}{r} 141 \\ 22 \\ +413 \\ \hline 576 \end{array}$$

51. Find the sum.

$$\begin{array}{r} 34 \\ +58 \\ \hline 92 \end{array}$$

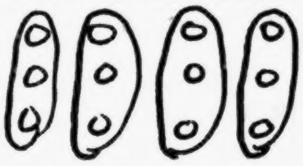
52. Find the difference.

$$\begin{array}{r} 247 \\ -123 \\ \hline 124 \end{array}$$

53. Find the difference.

$$\begin{array}{r} 52 \\ -35 \\ \hline 17 \end{array}$$

54. Draw a set model to show the product of $4 \times 3 = \boxed{12}$



any model showing four sets of 3 is correct - with or without the rings.

55. Write the name of the product in the box.

****

WRITE A NUMERAL IN THE BLANKS TO MAKE THE FOLLOWING SENTENCES TRUE.

56. $2 \times 4 = \underline{4} + 4$

57. $6 + 6 + 6 = \underline{3} \times 6$

Put a "1" in the circle.

Put a "2" in the rectangle.

Put a "3" in the square.

Put a "4" in the triangle.

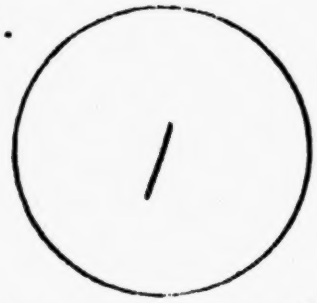
Put a "5" on the line segment.

Put a "6" on the line.

58.

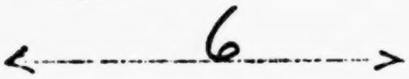
59.

60.



61.

62.



63.

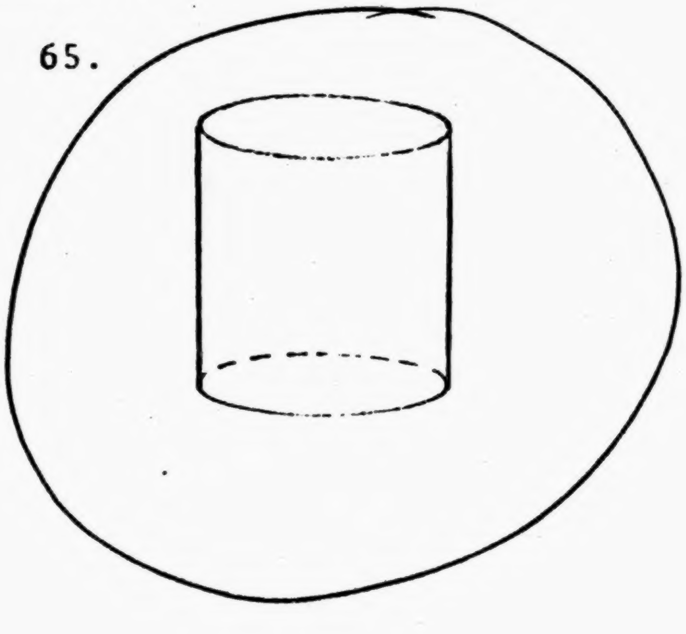
* * *

Put an "X" on the cone.

Draw a ring around the cylinder.

64.

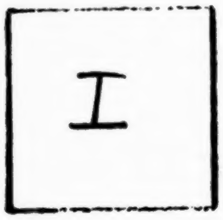
65.



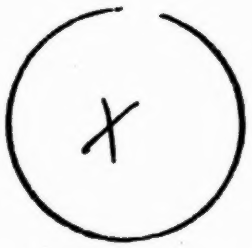
Put an "X" on the plane figure which is not closed.

Put an "I" inside the closed figure.

66.

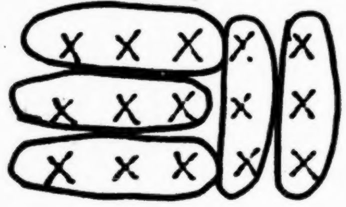


67.



* * *

68. Draw rings around subsets of three X's.

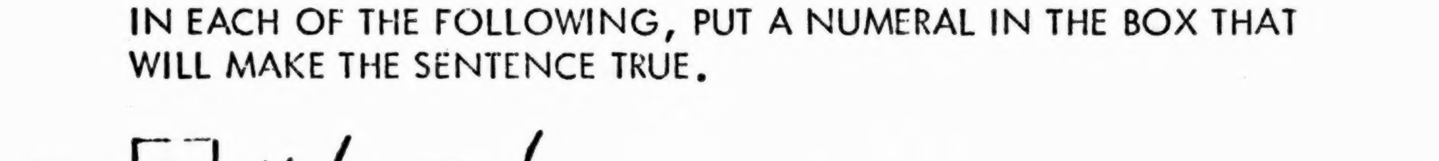


any set of rings that encircle 3 X's each is Correct.

69. Using the above example, complete this sentence: $15 \div 3 = \boxed{5}$

* * *

70. Above this number line show that 3 X 4 = 12.



71. Below the number line show that 4 X 3 = 12.

* * *

IN EACH OF THE FOLLOWING, PUT A NUMERAL IN THE BOX THAT WILL MAKE THE SENTENCE TRUE.

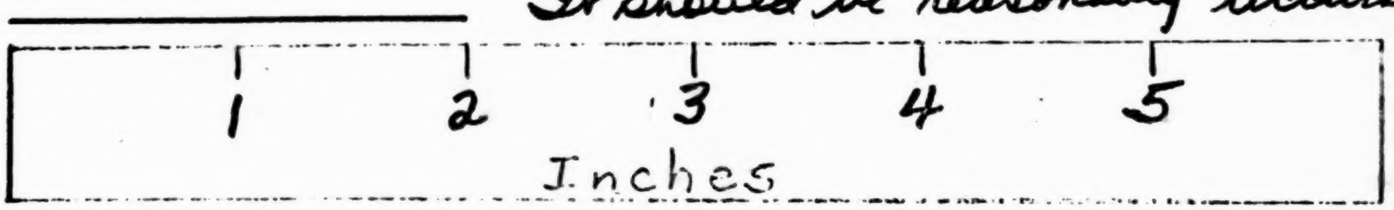
72. $\boxed{1} \times 6 = 6$

73. $7 \times \boxed{1} = 7$

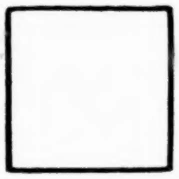
74. $0 \times 8 = \boxed{0}$

75. Draw a line segment 2 inches long above this ruler.

It should be "reasonably" accura



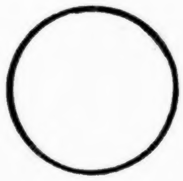
76. Draw a square.



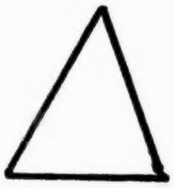
77. Draw a rectangle.

any "reason
recogniz
figure i
Correct f
76-79.

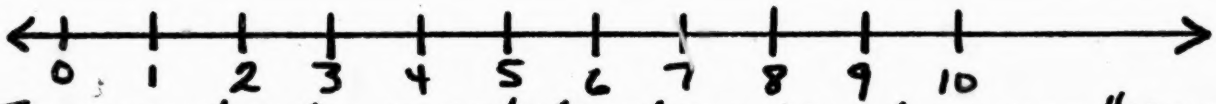
78. Draw a circle.



79. Draw a triangle.

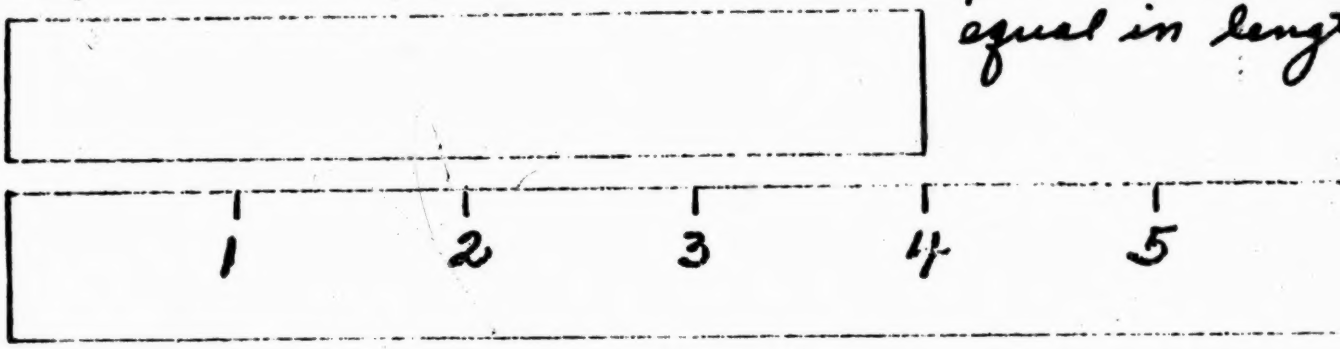


80. Draw a number line showing the numerals 0 through 10.



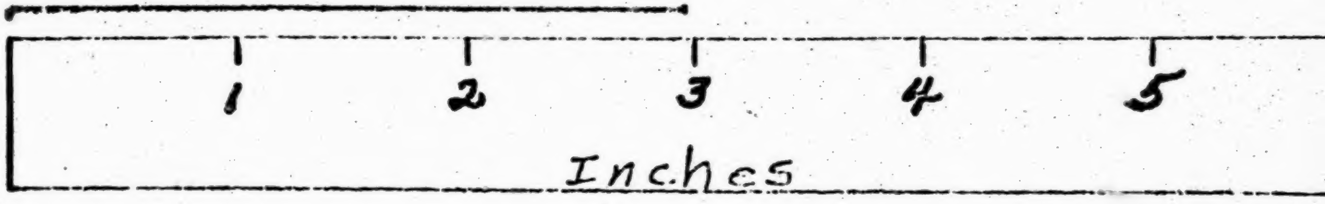
The arrowheads must be shown and spaces "reasonab
equal in lengt

81.



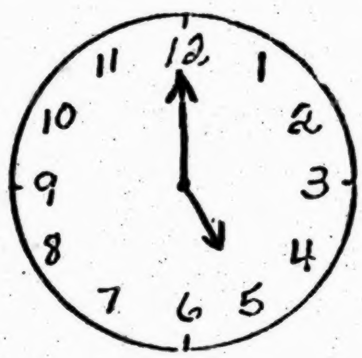
Here is a rectangle and a ruler. The length of this rectangle is 4 (inches, feet, yard). Underline the correct choice.

82:


1
2
3
4
5
Inches

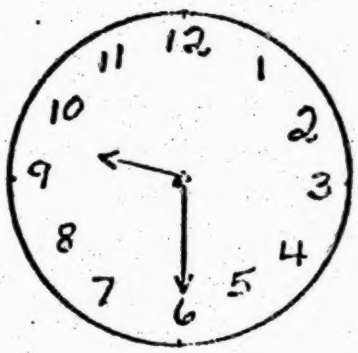
Here is a line segment and a ruler. The length of this line segment is about 3 inches.

83. Draw the hands to show the time that is written under the clock.


12
1
2
3
4
5
6
7
8
9
10
11

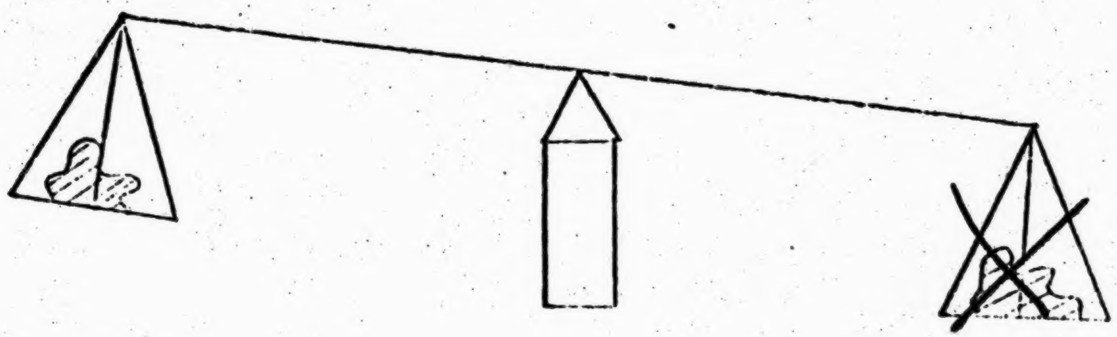
5:00

84. Look at the picture of th clock. What time is it?

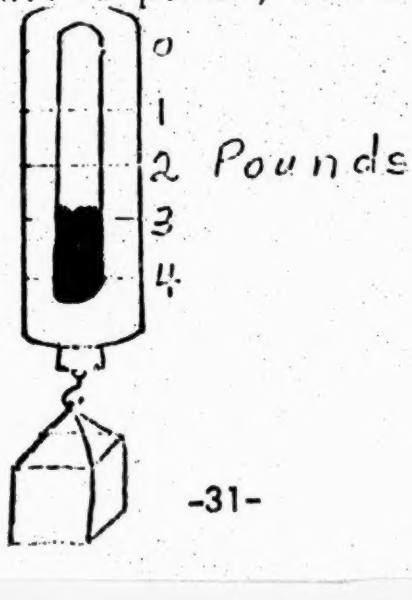

12
1
2
3
4
5
6
7
8
9
10
11

9:30

85. Put an "X" on the heaviest object on the balance scale.

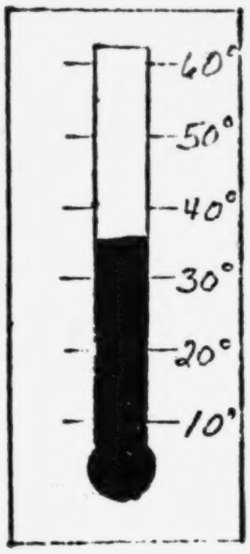


86. To the nearest pound, how much does the block weigh?

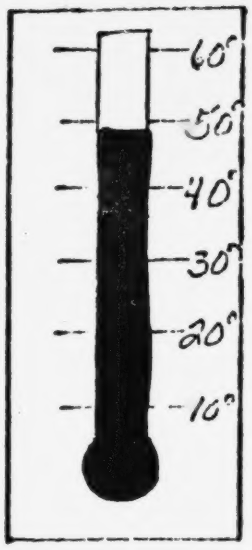

0
1
2 Pounds
3
4

3 pounds

87.


60°
50°
40°
30°
20°
10°

Monday


60°
50°
40°
30°
20°
10°

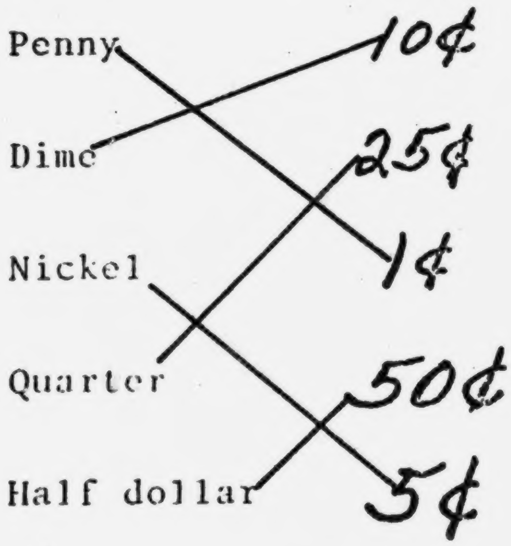
[✓ Tuesday]

Any "Tue
is corre

Was it warmer on Monday or [✓ Tuesday?] Draw a ring around the correct answer.

****

MATCH THE NAME OF EACH COIN WITH ITS VALUE. DRAW A LIN
TO CONNECT EACH PAIR.



88. Penny 10¢

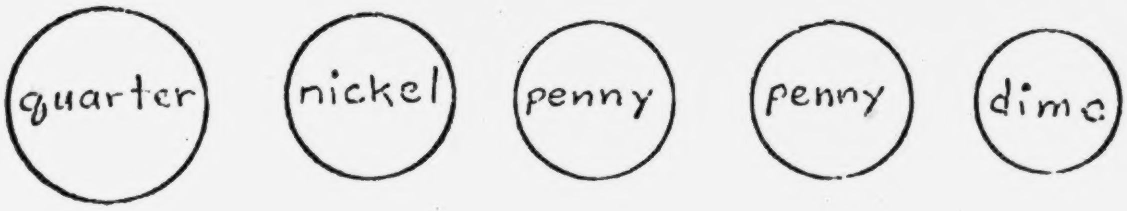
89. Dime 25¢

90. Nickel 1¢

91. Quarter 50¢

92. Half dollar 5¢

93.


quarter
nickel
penny
penny
dime

The total value of the above coins is 42¢.
or $.42

The ¢ or $ symbol is necessary.

94. I have 156 cents. Write this amount as dollars and cents.

$1.56 or One dollar and 56 cents

95. 1 half dollar = 5 dimes.

96. 1 dime = 10 pennies.

97. 1 dime = 2 nickels.

98. 60 minutes = 1 hour.

Time limit: 4 minutes

ADDITION TEST

$$\begin{array}{r}5\\+4\\\hline 9\end{array}\quad\begin{array}{r}9\\+2\\\hline 11\end{array}\quad\begin{array}{r}7\\+6\\\hline 13\end{array}\quad\begin{array}{r}6\\+5\\\hline 11\end{array}\quad\begin{array}{r}8\\+7\\\hline 15\end{array}\quad\begin{array}{r}7\\+5\\\hline 12\end{array}\quad\begin{array}{r}3\\+3\\\hline 6\end{array}\quad\begin{array}{r}5\\+2\\\hline 7\end{array}$$

$$\begin{array}{r}7\\+1\\\hline 8\end{array}\quad\begin{array}{r}8\\+2\\\hline 10\end{array}\quad\begin{array}{r}5\\+5\\\hline 10\end{array}\quad\begin{array}{r}9\\+4\\\hline 13\end{array}\quad\begin{array}{r}8\\+6\\\hline 14\end{array}\quad\begin{array}{r}7\\+0\\\hline 7\end{array}\quad\begin{array}{r}4\\+8\\\hline 12\end{array}\quad\begin{array}{r}6\\+9\\\hline 15\end{array}$$

$$\begin{array}{r}7\\+4\\\hline 11\end{array}\quad\begin{array}{r}0\\+6\\\hline 6\end{array}\quad\begin{array}{r}2\\+4\\\hline 6\end{array}\quad\begin{array}{r}6\\+6\\\hline 12\end{array}\quad\begin{array}{r}8\\+3\\\hline 11\end{array}\quad\begin{array}{r}4\\+6\\\hline 10\end{array}\quad\begin{array}{r}9\\+9\\\hline 18\end{array}\quad\begin{array}{r}8\\+8\\\hline 16\end{array}$$

$$\begin{array}{r}5\\+7\\\hline 12\end{array}\quad\begin{array}{r}6\\+3\\\hline 9\end{array}\quad\begin{array}{r}4\\+4\\\hline 8\end{array}\quad\begin{array}{r}3\\+5\\\hline 8\end{array}\quad\begin{array}{r}1\\+4\\\hline 5\end{array}\quad\begin{array}{r}9\\+6\\\hline 15\end{array}\quad\begin{array}{r}7\\+7\\\hline 14\end{array}\quad\begin{array}{r}5\\+9\\\hline 14\end{array}$$

$$\begin{array}{r}3\\+7\\\hline 10\end{array}\quad\begin{array}{r}2\\+2\\\hline 4\end{array}\quad\begin{array}{r}3\\+9\\\hline 12\end{array}\quad\begin{array}{r}7\\+2\\\hline 9\end{array}\quad\begin{array}{r}4\\+3\\\hline 7\end{array}\quad\begin{array}{r}6\\+8\\\hline 14\end{array}\quad\begin{array}{r}3\\+2\\\hline 5\end{array}\quad\begin{array}{r}2\\+8\\\hline 10\end{array}$$

Time limit: 4 minutes

SUBTRACTION TEST

$$\begin{array}{rrrrrrrr} 14 & 12 & 6 & 13 & 11 & 12 & 18 & 8 \\ -9 & -7 & -4 & -8 & -6 & -3 & -9 & -4 \\ \hline 5 & 5 & 2 & 5 & 5 & 9 & 9 & 4 \end{array}$$

$$\begin{array}{rrrrrrrr} 12 & 15 & 10 & 0 & 9 & 13 & 17 & 6 \\ -9 & -7 & -5 & -0 & -1 & -6 & -9 & -3 \\ \hline 3 & 8 & 5 & 0 & 8 & 7 & 8 & 3 \end{array}$$

$$\begin{array}{rrrrrrrr} 9 & 11 & 15 & 13 & 10 & 9 & 3 & 14 \\ -7 & -8 & -9 & -4 & -7 & -3 & -2 & -7 \\ \hline 2 & 3 & 6 & 9 & 3 & 6 & 1 & 7 \end{array}$$

$$\begin{array}{rrrrrrrr} 10 & 12 & 10 & 7 & 8 & 17 & 14 & 11 \\ -3 & -5 & -9 & -5 & -2 & -8 & -5 & -4 \\ \hline 7 & 7 & 1 & 2 & 6 & 9 & 9 & 7 \end{array}$$

$$\begin{array}{rrrrrrrr} 10 & 4 & 9 & 7 & 16 & 8 & 5 & 11 \\ -1 & -2 & -5 & -3 & -8 & -6 & -3 & -2 \\ \hline 9 & 2 & 4 & 4 & 8 & 2 & 2 & 9 \end{array}$$

(Rev. 4-69)

MATHEMATICS CONCEPTS TEST

Basic Test: Level Three

Answer Key and Teachers' Guide

MATHEMATICS CONCEPTS TEST

Basic Test: Level Three
(Grade Three)

ANSWER KEY AND TEACHERS' GUIDE

Description of Test

Items for this mathematics test have been written to assess behavioral objectives proposed by the Mathematics Curriculum Guide, K-6. Multiple choice test items are used where possible. Other behavioral objectives are tested by requiring the student to construct geometric figures. Immediate recall of basic facts is tested by four timed tests. A cross reference of objectives from the Curriculum Guide and items in the test is included with the Teachers' Guide.

Multiple Choice Test Items

Part I of the test consists of items which can be machine scored directly from the IBM 1230 answer sheet. Students mark answers on answer sheets. The test administrator should inform all students to mark each response carefully with a No. 2 black lead pencil. Answer sheets marked with ink or crayon cannot be machine scored. There should be no extra marks of any type on the answer sheet. Teachers may want to hand score certain answer sheets. In the process of hand scoring, no mark should be placed on the answer sheet until machine scoring has been completed.

Computer Analysis

Computer analysis of test results will develop the following information:

1. Number of items correct, missed and unanswered for each student.
2. Percentage score for each student.
3. Frequency distribution of percentage scores.
4. Mean score.
5. Standard deviation.
6. Item analysis -- biserial correlation.

Identification of Student Answer Sheets

Student name and other information on the upper left hand side of the answer sheet is used for a quick visual identification. However, the computer does not use this data. In the upper right hand section space is provided to code a student identification number. Data will be processed by the computer in accordance with this number. The recommended procedure for assigning student identification numbers is as follows:

1. Assign each student a different six (6) digit number. If desired the first digits may be zeros, i. e. 000001, 000002, etc. The test results will be recorded numerically by this student number.

2. Record the number vertically in the column of boxes, one digit to a box, starting at the top.

3. Darken in the corresponding digit in the rows to the right of the boxes, one digit to a box.

4. The teacher should keep a record of the number she has assigned to each student so that she can identify the student by that number when the tests are returned.

5. Two answer sheets are required for this test. Care should be taken that each student uses the same number for both answer sheets.

Teacher Scored Subtests

Parts II and III of the test consist of items which must be hand scored. After hand scoring an answer sheet should be prepared for each student to record the responses. Mark "a" for a correct response and "b" for an incorrect response. For unanswered questions, place no mark on the answer sheet.

Part II consists of eight items. Record the responses for this subtest on the first eight rows of the answer sheet. Part III consists of ninety-six items. Record the responses in rows 9 - 104 for this subtest.

Time Limits For Tests

This test is designed to be a mastery test. Consequently, time limits have been established which will permit over ninety percent of the students to attempt every item on the test. Students should be told that there is no penalty for guessing. It is better to attempt a difficult item than to pass it over.

Two sittings are recommended for Part I. The test however, should be administered in one day. This will preclude students checking on difficult items and perhaps changing their answers on the answer sheet.

1.	Part I	80 Minutes
2.	Part II	20 Minutes
3.	Part III	8 Minutes

Directions To Students

The student is expected to read the test and make a response either on the answer sheet or in the test booklet. No marks should be made in the test booklet for Part I. For Parts II and III the answer is written in the booklet. Unknown mathematical terms or processes should not be explained to students before or during the test. In Part II students may be informed that a "model" is a "picture." Construction should be done with a straight edge.

Supplies Needed For Testing

1. For Part I each student should have two No. 2 pencils, scratch paper, one test and one answer sheet.

2. For Part II students will need a compass, a straight edge, pencils and one test.

3. For Part III students will need pencils and one copy of the test.

Norms

District norms will be made available so that student achievement in different schools can be compared. Teachers should be more concerned with the item analysis and cross reference of objectives and test items. A study of test results for any class will provide insights concerning areas where more instruction is needed both for individuals and groups of students.

BASIC TEST: LEVEL THREE

A CROSS REFERENCE OF OBJECTIVES FROM THE CURRICULUM GUIDE AND ITEMS IN THE MATHEMATICS COVERAGE TEST

CODE: "N" means number strand; "Nu" means numeration strand; "O" means operations strand; "G" means geometry strand; and, "M" means measurement strand.

An example: M-4 means the fourth objective under measurement.

OBJECTIVE #	ITEM #
N-1	1
N-2&4	2
N-3	3
N-5	4
N-6	5
N-7	6
N-8	7
N-9	8
N-10	9
N-11	10
N-13	11
N-14	12
Nu-1	13
Nu-2	14
Nu-3	15
Nu-4	16
Nu-5	17
Nu-9	18
O-3	19
O-4	20
O-6	21
O-8	22
O-7	23
O-9	24
O-10	25,26
O-11	27,28
O-14	29
O-12	30
O-23	31
O-22&24	32
O-25	33
O-22&26	34
O-27	35

OBJECTIVE #	ITEM #
O-30	36
O-31	37,38
O-32	39
O-33	40
G-1	41
G-5	42
G-6	43
G-2	44-54
G-9	49
G-3	55-58
M-1	59
M-2	60
M-3	61
M-4	62
M-5	63
M-6	64
M-7	65
M-8	66
M-9	67
M-10	68
M-11	69
M-12	70
N-12	71
Nu-6	72
Nu-7	73
Nu-8	74

O-1	75
O-2	76
O-13&21	77
O-15&17	78
O-16&17	79
O-18	80
O-19	81
O-28	82
O-29	83

PART II

OBJECTIVE #	ITEM #
G-7	1-3
G-8	4
G-4	5
G-8	6
G-7	7
G-10	8

Addition Test O-3
Subtraction Test O-3
Multiplication Test O-11
Division Test O-11

Johnson LARRY J

Mrs. R. Roberts

LAURA Dearing 215

Math 1-6-69

Level I Part 4

INSTRUCTIONS Please Read Carefully

1. Erase completely any answer you change
2. Do not write in margin
3. Use No. 2 pencil and fill box
4. Make marks heavy and black

STUDENT IDENTIFICATION NUMBER

BLACKEN APPROPRIATE DIGIT HERE

0	▬	1	2	3	4	5	6	7	8	9
5	0	1	2	3	4	▬	6	7	8	9
1	0	▬	2	3	4	5	6	7	8	9
7	0	1	2	3	4	5	6	▬	8	9
6	0	1	2	3	4	5	▬	7	8	9
2	0	1	▬	3	4	5	6	7	8	9

SECTION A

Sample

SECTION B

CLARK COUNTY SCHOOL DISTRICT
LAS VEGAS, NEVADA

MATHEMATICS CONCEPTS TESTS

Basic Test: Level Three

Answer Key

SCORING KEY

MATHEMATICS CONCEPTS TEST

Basic Test: Level Three

Part I

Part I. NUMBER AND NUMERATION

1. The set of □'s from this collection □△○○□□△ has

   a. 7 members b. 5 members [✓ c.] 3 members d. 1 member

2. Which shows a pair of equivalent sets?

   [✓ a.] {a, b, c} and {red, white, blue}

   b. {a, b, c} and {red, blue, green, white}

   c. {a, b} and {a, b, c}

   d. {s, b, c} and {□, ○}

3. One hand has how many fingers?

   a. 9 [✓ b.] 5 c. 1 d. 10

4. The set of elephants sitting in this room is

   [✓ a.] { } b. 0 c. {pink} d. {3, 4, 5}

5. Which of the sets below is a subset of this one?

   {▭, △, ○, ⬡, ⬭}

   a. {⬡, ⊗, ○}

   b. {⬯, ▭}

   [✓ c.] {▭, ⬡, ○}

   d. ▭, △, ○, ⬡, ⬭, □}

6. The cardinal number of this set {○, △, ⬭, □, ▭} is

a. 4 b. 3 c. 2 [✓ d.] 5

7. The numerals which come before and after 710 are

a. 709, ______, 710

b. 711, ______, 712

c. 708, ______, 709

[✓ d.] 709, ______, 711

8. Which group of numerals is arranged in order beginning with the smallest numeral?

a. 27, 31, 29, 30, 38

b. 31, 30, 29, 28, 27

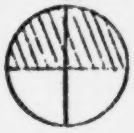
[✓ c.] 27, 28, 29, 30, 31

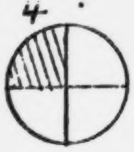
d. 30, 31, 27, 28, 29

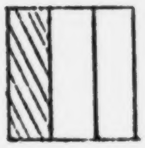
9. Which statement is correct?

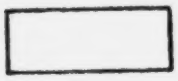
[✓ a.] $4 > 2$ b. $4 < 2$ c. $4 = 2$ d. $4 \neq 2 + 2$

10. Which picture shows $\frac{1}{4}$?

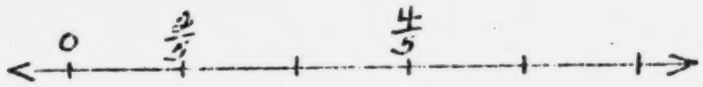
a. 

[✓ b.] 

c. 

d. 

11. This number line shows that



[✓ a.] $\frac{2}{5} < \frac{4}{5}$ b. $\frac{2}{5} = \frac{4}{5}$ c. $\frac{2}{5} > \frac{4}{5}$ d. $\frac{2}{5} \neq \frac{2}{5}$

12. The fourth object in this row is □ ○ ⬡ △ ⬭

a. ⬭ b. ○ [✓ c.] △ d. ⬡

13. Which is not a name for 7?

a. 5 + 2 b. 9 - 2 c. 2 + 2 + 3 [✓ d.] 5 - 2

14. 236 =

a. two hundred thirty

b. two hundred six

[✓ c.] two hundred thirty-six

d. two thirty-six

15. One hundred sixty-seven =

a. 107 b. 176 [✓ c.] 167 d. 617

16. In the numeral 3486, the four is in the

a. tens place

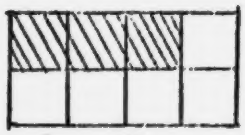
[✓ b.] hundreds place

c. thousands place

d. ones place

17. In the numeral 3486, the 4 means

a. 40 b. 4,000 c. 4 [✓ d.] 400

18. This model  shows

[✓ a.] $\frac{3}{8}$ b. $\frac{3}{5}$ c. $\frac{3}{4}$ d. $\frac{1}{2}$

19. $\square + 27 = 42$ means

[✓ a.] $42 - 27 = \square$

b. $27 - \square = 42$

c. $\square - 42 = 27$

d. $20 + 7 = 27$

20. Which of the problems below is a check of the answer to this problem? $\begin{array}{r} 14 \\ -5 \\ \hline 9 \end{array}$

a. $\begin{array}{r} 5 \\ -9 \\ \hline \end{array}$ b. $\begin{array}{r} 9 \\ -5 \\ \hline \end{array}$ c. $\begin{array}{r} 14 \\ +9 \\ \hline \end{array}$ [✓ d.] $\begin{array}{r} 5 \\ +9 \\ \hline \end{array}$

21. $17 + \square = 32 + 17$

a. $\square = 0$ [✓ b.] $\square = 32$ c. $\square = 1$ d. $\square = 17$

22. Which grouping is easiest for adding these numbers?

a. $(25 + 2) + (5 + 8)$

[✓ b.] $(25 + 5) + (2 + 8)$

c. $(5 + 2) + (25 + 8)$

d. $(2 + 5) + (25 + 8)$

23. Which grouping is easier for adding?

[✓ a.] $8 + (49 + 1)$ b. $(8 + 49) + 1$

24. $14 - \square = 14 + \square$

a. $\square = 1$ [✓ b.] $\square = 0$ c. $\square = 14$ d. $\square = 13$

25. 1746 + 2042 = ☐

a. ☐ = 3098 b. ☐ = 3888 [✓ c.] ☐ =3788 d. ☐ = 3089

26. 3947 - 2605 = ☐

a. ☐ = 1242 b. ☐ = 1332 c. ☐ = 1352 [✓ d.] ☐ = 1342

27.
$$\begin{array}{r} 4867 \\ 293 \\ 94 \\ +\,5101 \\ \hline \boxed{} \end{array}$$

a. ☐ = 10,364
b. ☐ = 9,354
c. ☐ = 91,345
[✓ d.] ☐ = 10,355

28.
$$\begin{array}{r} 4361 \\ -\,1857 \\ \hline \boxed{} \end{array}$$

a. ☐ = 3,516
[✓ b.] ☐ = 2,504
c. ☐ = 3,514
d. ☐ = 2,514

29. 8 + 8 + 8 + 8 + 8 = ☐ X 8

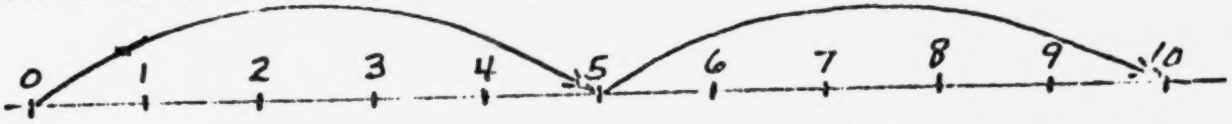
a. ☐ = 8 [✓ b.] ☐ = 5 c. ☐ = 6 d. ☐ = 1

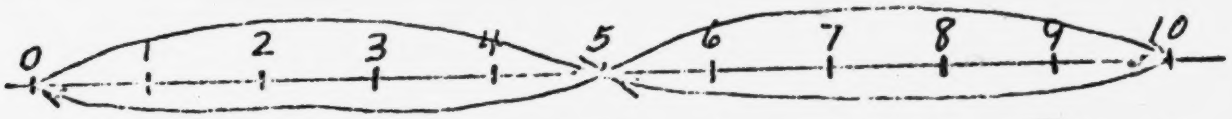
30. What symbol placed in the ☐ makes this a true statement?

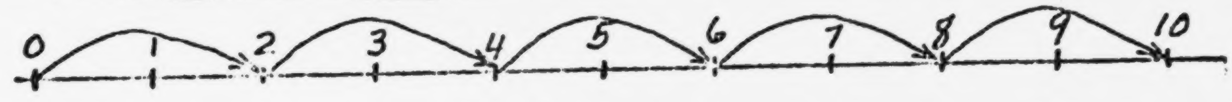
14 ☐ 2 = 7

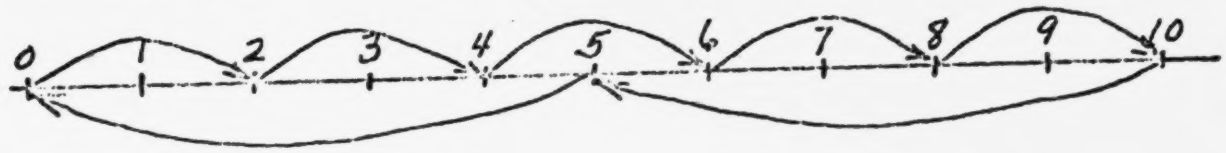
a. + b. − c. × [✓ d.] ÷

31. Which number line shows that 2 X 5 = 5 X 2

a.

0
1
2
3
4
5
6
7
8
9
10

b.

0
1
2
3
4
5
6
7
8
9
10

c.

0
1
2
3
4
5
6
7
8
9
10

[✓ d.]

0
1
2
3
4
5
6
7
8
9
10

32. 7 X 2 = □ X 7

a. □ = 7 b. □ = 0 [✓ c.] □ = 2 d. □ = 1

33. (5 X 2) X 3 = □ X (2 X 3)

a. □ = 2 b. □ = 3 c. □ = 10 [✓ d.] □ = 5

34. 4 X □ = 4 ÷ □ = 4

a. □ = 0 [✓ b.] □ = 1 c. □ = 2 d. □ = 4

35. □ X 25 = 0

[✓ a.] □ = 0 b. □ = 1 c. □ = 25 d. □ = 5

36. If 7 X 2 = 14, then 7 X 20 = □

a. □ = 14 [✓ b.] □ = 140 c. □ = 104 d. □ = 1400

37. $\begin{array}{r} 132 \\ \times\ \ 3 \\ \hline \boxed{} \end{array}$

[✓ a.] □ = 396
b. □ = 135
c. □ = 196
d. □ = 496

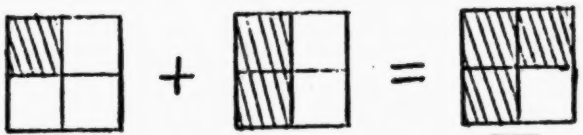
38. $\begin{array}{r} 132 \\ \times\ \ 7 \\ \hline \boxed{} \end{array}$

a. □ = 139
b. □ = 72,114
c. □ = 828
[✓ d.] □ = 924

39. $\begin{array}{r} \boxed{} \\ 3\overline{)369} \end{array}$

a. □ = 10,203
b. □ = 122
c. □ = 133
[✓ d.] □ = 123

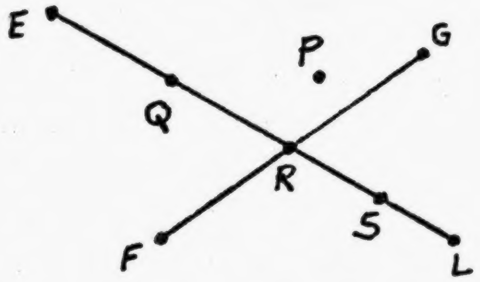
40. These models show that



$\frac{1}{4} + \frac{2}{4} = \square$

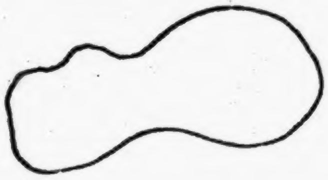
a. $\square = \frac{1}{4}$ b. $\square = \frac{2}{4}$ [✓ c.] $\square = \frac{3}{4}$ d. $\square = \frac{4}{4}$

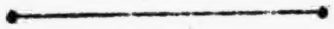
41. At what point do the two line segments cross?

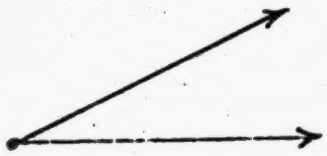


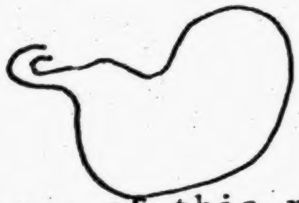
a. at point P   b. at point Q   [✓ c.] at point R   d. at point

42. Which figure shows a simple closed curve?

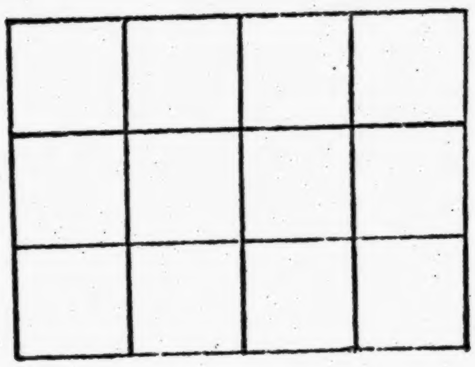
[✓ a.] 

b. 

c. 

d. 

43. The area of this rectangle is:

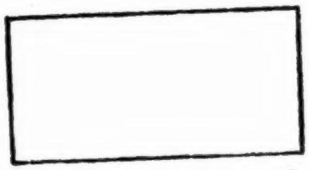


a. 9 square units

b. 10 square units

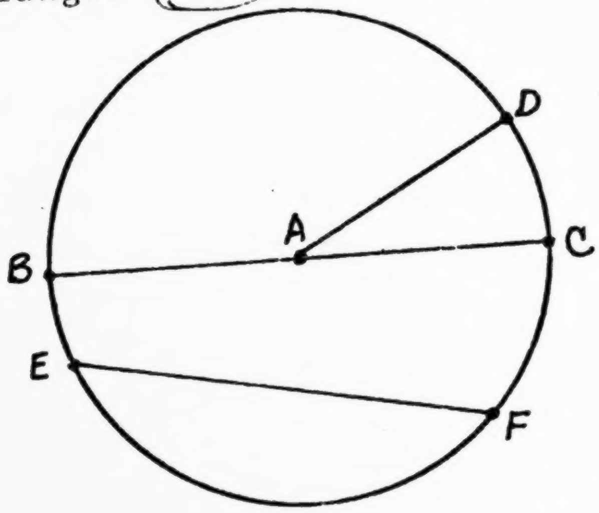
[✓ c.] 12 square units

d. 16 square units



44. What is the name of this quadrilateral?

a. triangle [✓ b.] rectangle c. square d. circle



45. In the circle above, point A is:

a. a chord

b. a diameter

c. a radius

[✓ d.] the center

46. In the circle above, $\overline{BC}$ is:

a. a diagonal

[✓ b.] a diameter

c. a radius

d. the center

47. In the circle above, $\overline{AD}$ is:

a. a chord

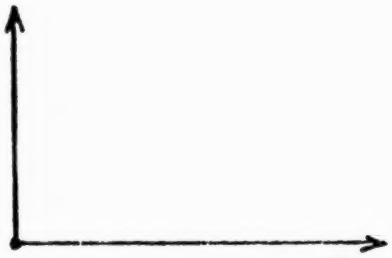
b. a diameter

[✓ c.] a radius

d. the center

48. In the circle above, $\overline{EF}$ is:

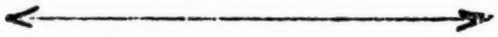
[✓ a.] a chord b. the center c. diameter d. radius

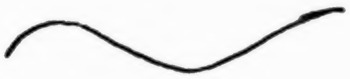
49. 

This figure is a

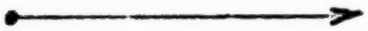
a. triangle [✓ b.] right angle c. diameter d. diagonal

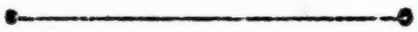
FOR NUMBERS 50 THROUGH 54 MARK THE LETTER OF EACH CORRECT ANSWER

50.  a. point D

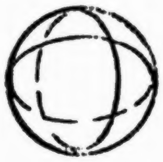
51.  b. path B

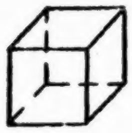
52. c. ray A

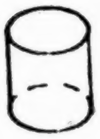
53.  d. line C

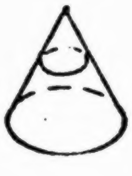
54.  e. line segment E

FOR NUMBERS 55 THROUGH 58 MARK THE LETTER OF EACH CORRECT ANSWER

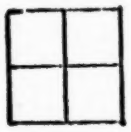
55.  a. cube B

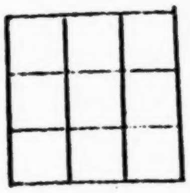
56.  b. sphere A

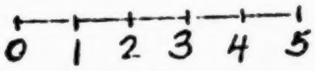
57.  c. cylinder C

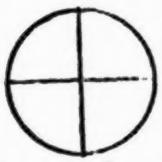
58.  d. cone D

59. Which area has only four square units?

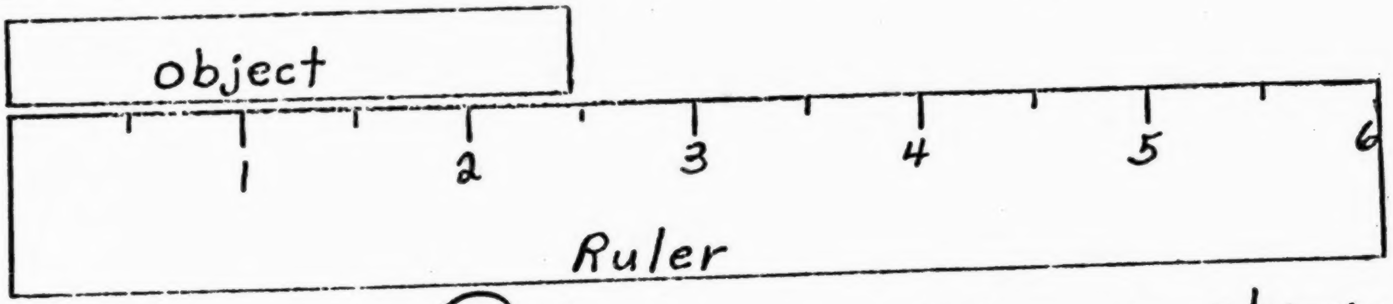
[✓ a.]


b.


c.


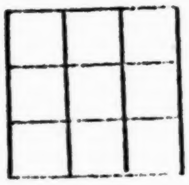
d.


60. The length of this object to the nearest $\frac{1}{2}$ inch is



a. 2 inches [✓ b.] $2\frac{1}{2}$ inches c. 3 inches d. $3\frac{1}{2}$ inches

61. The number of square units like this □ in the larger area is

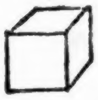


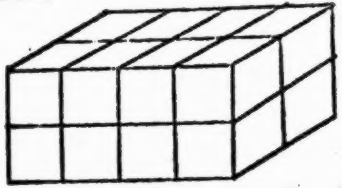
a. 2 square units

b. 6 square units

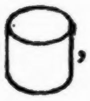
c. 3 square units

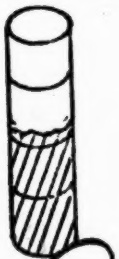
[✓ d.] 9 square units

62. This shows one cube.  How many cubes would it take to fill this box?



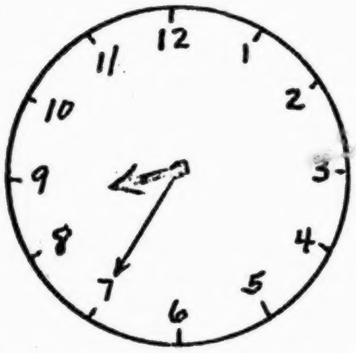
a. 12 cubes b. 3 cubes c. 2 cubes [✓ d. 16 cubes]

63. If this is a cup , how much liquid is in this glass container?



a. 1 cup [✓ b. 2 cups] c. 3 cups d. 4 cups

64. What time is it?



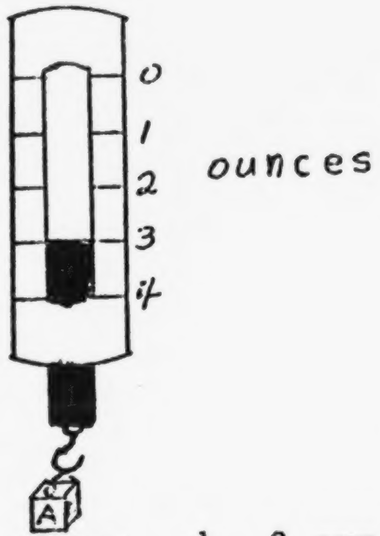
[✓ a. 25 minutes to 9]

b. 7 minutes after 8

c. 10 minutes after 8

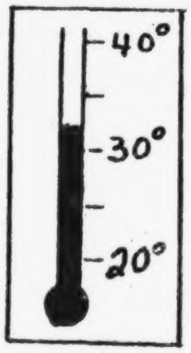
d. 7 o'clock

65. What is the weight of the box hanging on the scales?



a. 1 ounce b. 2 ounces [✓ c.] 3 ounces d. 4 ounces

66. Water freezes at the temperature shown on the thermometer. What temperature does the thermometer show?

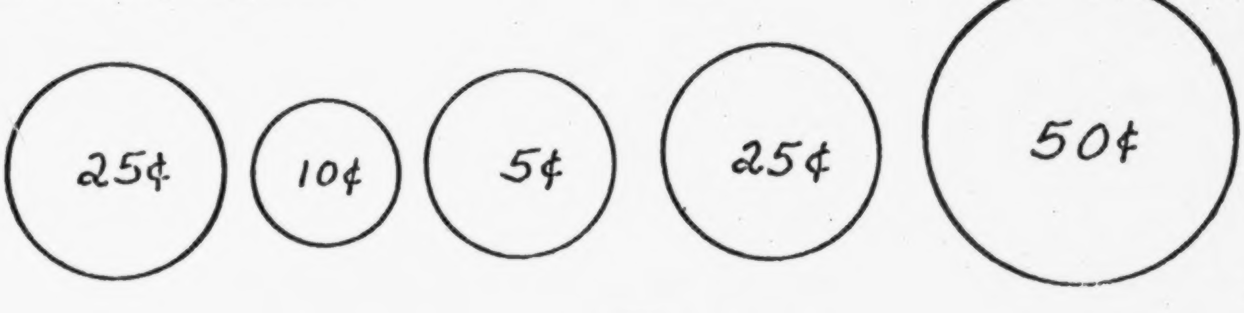


a. 31° [✓ b.] 32° c. 40° d. 50°

67. 25 pennies has the same value as

a. 1 nickel b. 1 dime [✓ c.] 1 quarter d. 1 dollar

68. This money equals



a. $1.25 b. $10.15 [✓ c.] $1.15 d. $1.05

69. Which statement is true?

a. 12 inches = 1 yard

b. 50 pennies = 1 dollar

c. 1 foot = 8 inches

[✓ d.] 12 inches = 1 foot

70. 9 inches + 5 inches = ☐

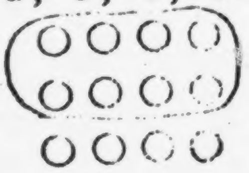
a. ☐ = 1 foot 4 inches

b. ☐ = 13 inches

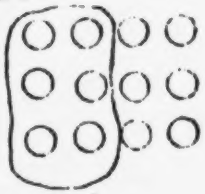
[✓ c.] ☐ = 1 foot 2 inches

d. ☐ = 14 feet

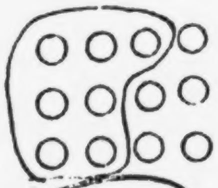
71. Which set of O's shows a ring drawn around $\frac{7}{12}$ of the set, a, b, c, or d?



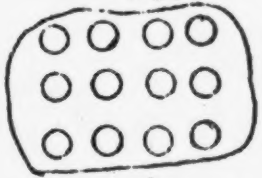
(a)



(b)



[✓ (c)]



(d)

72. 4000 + 600 + 90 + 5 = ☐

[✓ a.] ☐ = 4695

b. ☐ = 5964

c. ☐ = 4,000,600,905

d. ☐ = 4,060,905

73. In Roman Numerals, 12 =

a. II

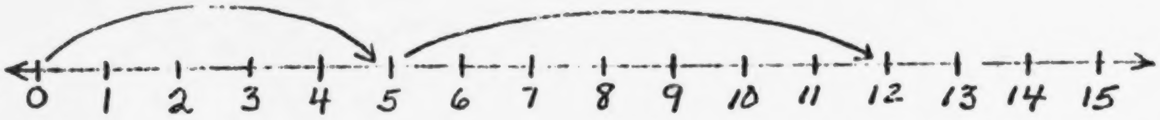
b. IXX

c. VII

[✓ d.] XII

74. XIV is another name for _____.

a. 41 [✓ b.] 14 c. 16 d. 25

75.


This number line shows that:

[✓ a.] 5 + 7 = 12

b. 12 - 5 = 7

c. 5 + 8 = 13

d. 5 + 10 = 15

76. If 13 + 24 = 37, which of these sentences is not true ?

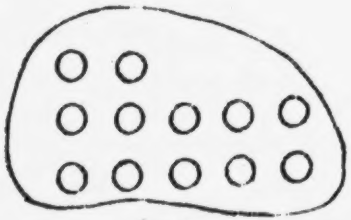
a. 24 + 13 = 37

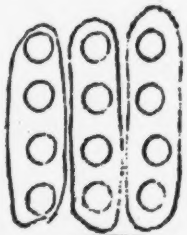
b. 37 - 24 = 13

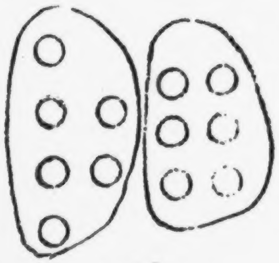
[✓ c.] 24 - 13 = 37

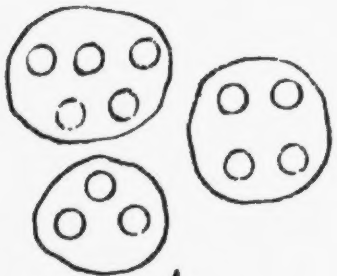
d. 37 - 13 = 24

77. Which model shows 3 X 4 = 12

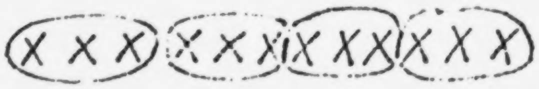

(a)

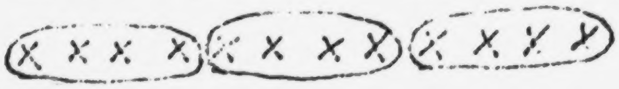

[✓ (b)]

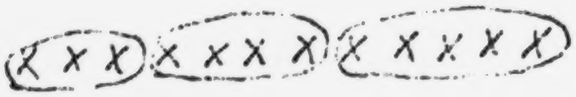

(c)

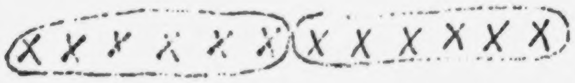

(d)

78. Which of these sets is divided into subsets of 3?

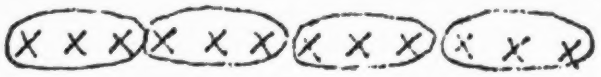
[✓ a.]


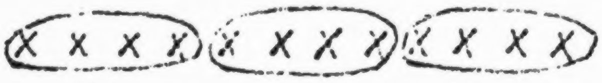
b.


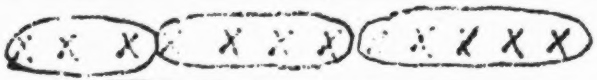
c.


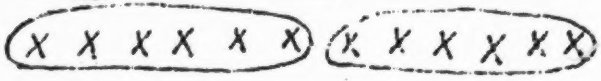
d.


79. Which of the following sets is divided into 3 equivalent subsets?

a.


[✓ b.]


c.


d.


80. Which problem shows that 18 ÷ 6 = 3

[✓ a.]
18
−6 ①
12
−6 ②
6
−6 ③
0

b.
18
−9 ①
9
−9 ②
0

c.
18
−3 ①
15
−3 ②
12
−3 ③
9

81. Which of the following operations will "undo" 3 X 5 = 15?

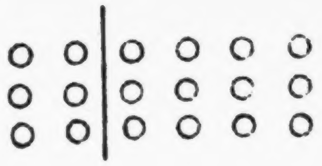
a. 15 - 5

b. 15 + 5

c. 5 X 3

[✓ d.] 15 ÷ 5

82. $3 \times (\boxed{}) = (3 \times 2) + (3 \times 4)$



From this model, find the value of $\boxed{}$

a. $\boxed{} = 2 + 5$

b. $\boxed{} = 2 + 3$

[✓ c.] $\boxed{} = 2 + 4$

83. 5 X 7 = 5 X (2 + 5) = (5 X 2) + (5 X 5) = ________ + ________

a. 15 + 20

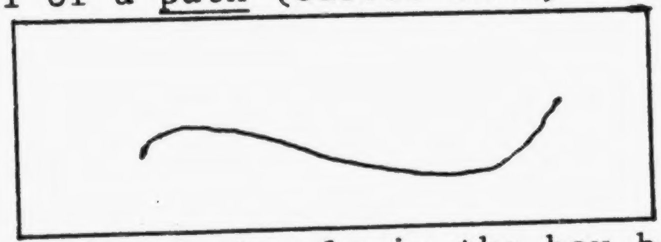
[✓ b.] 10 + 25

c. 25 + 25

d. 7 + 10

Part II

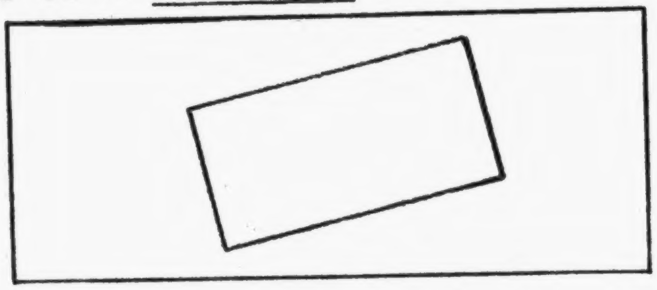
1. Draw a model of a path (curved line) in the box below.



any curved line or straight line is acceptable.

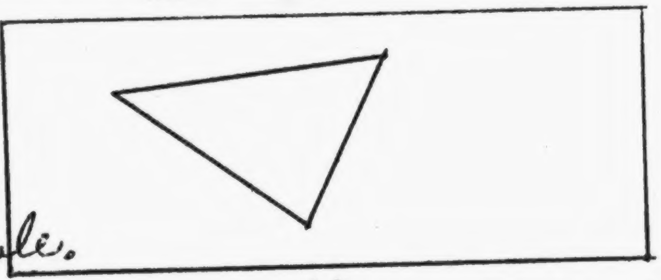
2. Draw a model of a rectangle in the box below.

Any quadrilateral with angles "reasonably" close to 90° is acceptable.

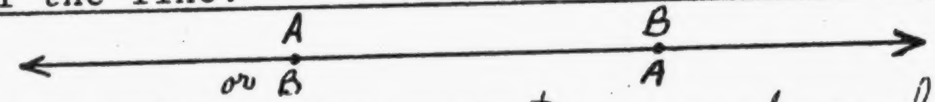


3. Draw a model of a triangle in the box below.

any triangle is acceptable. A figure that has disconnected sides is unacceptable.

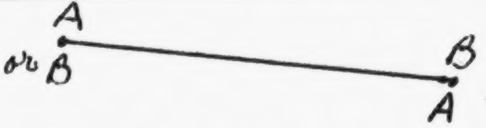


4. Draw a model of line AB ($\overleftrightarrow{AB}$) in the box below. Label the line.



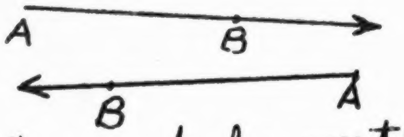
It must have arrow points on each end. It may be labeled either way, as shown above.

5. Draw a model of a line segment AB ($\overline{AB}$) in the box below. Label the line segment.



The points may be labeled either way. Dots or marks at the ends of the segment aren't necessary.

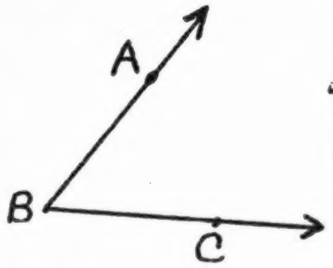
6. Draw a model of ray AB ($\overrightarrow{AB}$) in the box below. Label the ray.



or

The "A" must be on the end opposite the arrow point.

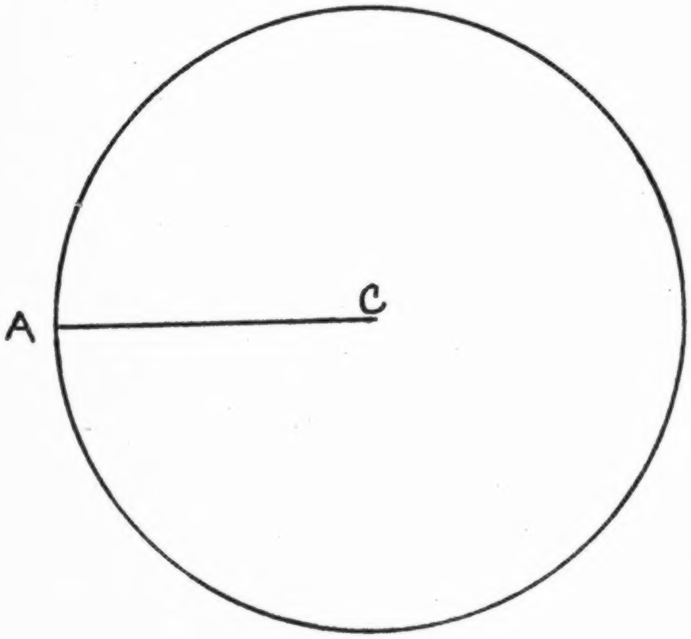
7. Draw a model of angle ABC (∠ ABC) in the box below so that points A,B and C are on the angle. Label the angle.



The rays must have arrow points.
The "B" must be at the common end-point of the two rays.

8. Using a compass draw a circle. Use point C as the center and $\overline{AC}$ as the radius.

The center must be at point C, not at A.



Part III

ADDITION TEST

Time limit: 2 minutes

(1) $\begin{array}{r}5\\+4\\\hline 9\end{array}$ (2) $\begin{array}{r}7\\+6\\\hline 13\end{array}$ (3) $\begin{array}{r}8\\+7\\\hline 15\end{array}$ (4) $\begin{array}{r}3\\+3\\\hline 6\end{array}$ (5) $\begin{array}{r}5\\+2\\\hline 7\end{array}$ (6) $\begin{array}{r}7\\+1\\\hline 8\end{array}$

(7) $\begin{array}{r}5\\+5\\\hline 10\end{array}$ (8) $\begin{array}{r}9\\+4\\\hline 13\end{array}$ (9) $\begin{array}{r}7\\+0\\\hline 7\end{array}$ (10) $\begin{array}{r}6\\+9\\\hline 15\end{array}$ (11) $\begin{array}{r}7\\+4\\\hline 11\end{array}$ (12) $\begin{array}{r}6\\+6\\\hline 12\end{array}$

(13) $\begin{array}{r}8\\+3\\\hline 11\end{array}$ (14) $\begin{array}{r}8\\+8\\\hline 16\end{array}$ (15) $\begin{array}{r}5\\+7\\\hline 12\end{array}$ (16) $\begin{array}{r}6\\+3\\\hline 9\end{array}$ (17) $\begin{array}{r}3\\+5\\\hline 8\end{array}$ (18) $\begin{array}{r}9\\+6\\\hline 15\end{array}$

(19) $\begin{array}{r}7\\+7\\\hline 14\end{array}$ (20) $\begin{array}{r}5\\+9\\\hline 14\end{array}$ (21) $\begin{array}{r}3\\+9\\\hline 12\end{array}$ (22) $\begin{array}{r}4\\+3\\\hline 7\end{array}$ (23) $\begin{array}{r}6\\+8\\\hline 14\end{array}$ (24) $\begin{array}{r}2\\+8\\\hline 10\end{array}$

SUBTRACTION TEST

Time limit: 2 minutes

(25) $\begin{array}{r} 11 \\ -\ 9 \\ \hline 2 \end{array}$
(26) $\begin{array}{r} 11 \\ -\ 5 \\ \hline 6 \end{array}$
(27) $\begin{array}{r} 12 \\ -\ 7 \\ \hline 5 \end{array}$
(28) $\begin{array}{r} 14 \\ -\ 5 \\ \hline 9 \end{array}$
(29) $\begin{array}{r} 10 \\ -\ 8 \\ \hline 2 \end{array}$
(30) $\begin{array}{r} 14 \\ -\ 8 \\ \hline 6 \end{array}$

(31) $\begin{array}{r} 12 \\ -\ 4 \\ \hline 8 \end{array}$
(32) $\begin{array}{r} 17 \\ -\ 8 \\ \hline 9 \end{array}$
(33) $\begin{array}{r} 16 \\ -\ 7 \\ \hline 9 \end{array}$
(34) $\begin{array}{r} 6 \\ -\ 0 \\ \hline 6 \end{array}$
(35) $\begin{array}{r} 6 \\ -\ 4 \\ \hline 2 \end{array}$
(36) $\begin{array}{r} 10 \\ -\ 6 \\ \hline 4 \end{array}$

(37) $\begin{array}{r} 18 \\ -\ 9 \\ \hline 9 \end{array}$
(38) $\begin{array}{r} 15 \\ -\ 8 \\ \hline 7 \end{array}$
(39) $\begin{array}{r} 13 \\ -\ 5 \\ \hline 8 \end{array}$
(40) $\begin{array}{r} 10 \\ -\ 3 \\ \hline 7 \end{array}$
(41) $\begin{array}{r} 4 \\ -\ 2 \\ \hline 2 \end{array}$
(42) $\begin{array}{r} 8 \\ -\ 4 \\ \hline 4 \end{array}$

(43) $\begin{array}{r} 9 \\ -\ 7 \\ \hline 2 \end{array}$
(44) $\begin{array}{r} 5 \\ -\ 3 \\ \hline 2 \end{array}$
(45) $\begin{array}{r} 15 \\ -\ 6 \\ \hline 9 \end{array}$
(46) $\begin{array}{r} 3 \\ -\ 2 \\ \hline 1 \end{array}$
(47) $\begin{array}{r} 7 \\ -\ 4 \\ \hline 3 \end{array}$
(48) $\begin{array}{r} 5 \\ -\ 1 \\ \hline 4 \end{array}$

MULTIPLICATION TEST

Time limit: 2 minutes

(49) 5 x 5 25	(50) 9 x 4 36	(51) 8 x 6 48	(52) 4 x 8 32	(53) 6 x 9 54	(54) 7 x 4 28
(55) 0 x 6 0	(56) 2 x 4 8	(57) 6 x 6 36	(58) 7 x 7 49	(59) 5 x 9 45	(60) 3 x 7 21
(61) 3 x 9 27	(62) 4 x 3 12	(63) 6 x 8 48	(64) 2 x 8 16	(65) 7 x 6 42	(66) 8 x 7 56
(67) 5 x 2 10	(68) 4 x 6 24	(69) 9 x 9 81	(70) 8 x 8 64	(71) 3 x 5 15	(72) 1 x 4 4

DIVISION TEST

Time limit: 2 minutes

(73) $\begin{array}{r} 2 \\ 2\overline{)4} \end{array}$

(74) $\begin{array}{r} 2 \\ 7\overline{)14} \end{array}$

(75) $\begin{array}{r} 3 \\ 2\overline{)6} \end{array}$

(76) $\begin{array}{r} 5 \\ 4\overline{)20} \end{array}$

(77) $\begin{array}{r} 2 \\ 9\overline{)18} \end{array}$

(78) $\begin{array}{r} 5 \\ 6\overline{)30} \end{array}$

(79) $\begin{array}{r} 5 \\ 7\overline{)35} \end{array}$

(80) $\begin{array}{r} 3 \\ 3\overline{)9} \end{array}$

(81) $\begin{array}{r} 1 \\ 7\overline{)7} \end{array}$

(82) $\begin{array}{r} 8 \\ 2\overline{)16} \end{array}$

(83) $\begin{array}{r} 8 \\ 3\overline{)24} \end{array}$

(84) $\begin{array}{r} 3 \\ 6\overline{)18} \end{array}$

(85) $\begin{array}{r} 4 \\ 4\overline{)16} \end{array}$

(86) $\begin{array}{r} 5 \\ 3\overline{)15} \end{array}$

(87) $\begin{array}{r} 4 \\ 1\overline{)4} \end{array}$

(88) $\begin{array}{r} 6 \\ 9\overline{)54} \end{array}$

(89) $\begin{array}{r} 0 \\ 7\overline{)0} \end{array}$

(90) $\begin{array}{r} 9 \\ 4\overline{)36} \end{array}$

(91) $\begin{array}{r} 8 \\ 3\overline{)24} \end{array}$

(92) $\begin{array}{r} 4 \\ 2\overline{)8} \end{array}$

(93) $\begin{array}{r} 8 \\ 6\overline{)48} \end{array}$

(94) $\begin{array}{r} 5 \\ 9\overline{)45} \end{array}$

(95) $\begin{array}{r} 8 \\ 8\overline{)64} \end{array}$

(96) $\begin{array}{r} 8 \\ 5\overline{)40} \end{array}$

(Rev. 4-69)

MATHEMATICS CONCEPTS TEST

Basic Test: Level Four

Answer Key and Teachers' Guide

MATHEMATICS CONCEPTS TEST

Basic Test: Level Four
(Grade Four)

ANSWER KEY AND TEACHERS' GUIDE

Description of Test

Items for this mathematics test have been written to assess behavioral objectives proposed by the Mathematics Curriculum Guide, K - 6. Multiple choice test items are used where possible. Other behavioral objectives are tested by requiring the student to construct geometric figures. Immediate recall of basic facts is tested by four timed tests. A cross reference of objectives from the Curriculum Guide and items in the test is included with the Teachers' Guide.

Multiple Choice Test Items

Part I of the test consists of items which can be machine scored directly from the IBM 1230 answer sheet. Students mark answers on answer sheets. The test administrator should inform all students to mark each response carefully with a No. 2 black lead pencil. Answer sheets marked with ink or crayon cannot be machine scored. There should be no extra marks of any type on the answer sheet. Teachers may want to hand score certain answer sheets. In the process of hand scoring, no mark should be placed on the answer sheet until machine scoring has been completed.

Computer Analysis

Computer analysis of test results will develop the following information:

1. Number of items correct, missed and unanswered for each student.
2. Percentage score for each student.
3. Frequency distribution of percentage scores.
4. Mean score.
5. Standard deviation.
6. Item analysis -- biserial correlation.

Identification of Student Answer Sheets

Student name and other information on the upper left hand side of the answer sheet is used for a quick visual identification. However, the computer does not use this data. In the upper right hand section space is provided to code a student identification number. Data will be processed by the computer in accordance with this number. The recommended procedure for assigning student identification numbers is as follows:

1. Assign each student a different six (6) digit number. If desired the first digits may be zeros, i. e. 000001, 000002, etc. The test results will be recorded numerically by this student number.
2. Record the number vertically in the column of boxes, one digit to a box, starting at the top.
3. Darken in the corresponding digit in the rows to the right of the boxes, one digit to a box.
4. The teacher should keep a record of the number she has assigned to each student so that she can identify the student by that number when the tests are returned.
5. Two answer sheets are required for this test. Care should be taken that each student uses the same number for both answer sheets.

Teacher Scored Subtests

Parts II and III of the test consist of items which must be hand scored. After hand scoring an answer sheet should be prepared for each student to record the responses. Mark "a" for a correct response and "b" for an incorrect response. For unanswered questions, place no mark on the answer sheet.

Part II consists of seven items. Record the responses for this subtest on the first seven rows of the answer sheet. Part III consists of ninety-six items. Record the responses in rows 8 - 103 for this subtest.

Time Limits For Tests

This test is designed to be a mastery test. Consequently, time limits have been established which will permit over ninety percent of the students to attempt every item on the test. Students should be told that there is no penalty for guessing. It is better to attempt a difficult item than to pass it over.

Two sittings are recommended for Part I. The test however, should be administered in one day. This will preclude students checking on difficult items and perhaps changing their answers on the answer sheet.

1.	Part I	90 Minutes
2.	Part II	20 Minutes
3.	Part III	8 Minutes

Directions To Students

The student is expected to read the test and make a response either on the answer sheet or in the test booklet. No marks should be made in the test booklet for Part I. For Parts II and III the answer is written in the booklet. Unknown mathematical terms or processes should not be explained to students before or during the test. In Part II students may be informed that a "model" is a "picture." Construction should be done with a straight edge.

Supplies Needed For Testing

1. For Part I each student should have two No. 2 pencils, scratch paper, one test and one answer sheet.
2. For Part II students will need a compass, a straight edge, pencils and one test.
3. For Part III students will need pencils and one copy of the test.

Norms

District norms will be made available so that student achievement in different schools can be compared. Teachers should be more concerned with the item analysis and cross reference of objectives and test items. A study of test results for any class will provide insights concerning areas where more instruction is needed both for individuals and groups of students.

BASIC TEST: LEVEL FOUR

A CROSS REFERENCE OF OBJECTIVES FROM THE CURRICULUM GUIDE AND ITEMS IN THE MATHEMATICS COVERAGE TEST

CODE: "N" means number strand; "Nu" means numeration strand; "O" means operations strand; "G" means geometry strand; and, "M" means measurement strand.

An example: M-4 means the fourth objective under measurement.

OBJECTIVE #	ITEM #
N-1	1
N-2&4	2
N-3	3
N-5	4
N-7	5
N-6	6
N-8	7
N-9	8
N-10	9
N-11	10
N-12	11
N-14	12
N-15	13
Nu-1	14
Nu-2	15
Nu-4	16
Nu-8	17
Nu-9	18
Nu-11	19
Nu-12	20
Nu-13	21
O-1	22
O-2	23
O-4	24
O-5	25
O-6	26,27
O-7	28,29
O-12	30
O-14	31
O-15	32
O-16	33
O-17	34
O-18	35
O-20	36
O-21	37
O-22	38
O-23	24
O-24	41,42
O-25	43
O-27	44,45
G-1	46,47
G-2	48
G-4	49
G-5	50
G-2	51-57
G-6	58
G-7	79
G-8	59
G-9	81
G-2	60-69
G-3	70-74
G-11	NC
M-1	75
M-2	76
M-3	77
M-4	78
M-5	79
M-6	80
M-7	81
M-8	82
M-9	83
M-10	84
M-11	85
M-12	86
M-13	87

N-13	88
Nu-3	89
Nu-5	90
Nu-6	91
Nu-7	92
Nu-10	93
O-8	94
O-9	95
O-10	96
O-13	97
O-19	98
O-26	99-100

PART II

OBJECTIVE #	ITEM #
G-10	1-5
G-12	6
G-13	7

Addition Test O-3
Subtraction Test O-3
Multiplication Test O-11
Division Test O-11

NC means not covered

LAST NAME PLEASE PRINT Johnson	FIRST LARRY	MIDDLE INITIAL J
SIGNATURE Mrs. R. Roberts		
INSTRUCTOR LAURA Dearing	COURSE NO 215	SECTION NO
SCHOOL NAME MATH	SCHOOL NO 1-16-69	
NAME OF TEST Level 1 PART 4	DATE	

INSTRUCTIONS Please Read Carefully

1. Erase completely any answer you change
2. Do not write in margins
3. Use No. 2 pencil and fill box.
4. Make marks heavy and black
5. For (T) True and (F) False questions, use (1) for true and (2) for false

STUDENT IDENTIFICATION NUMBER

BLACKEN APPROPRIATE DIGIT HERE

0	▬	1	2	3	4	5	6	7	8	9
5	0	1	2	3	4	▬	6	7	8	9
1	0	▬	2	3	4	5	6	7	8	9
7	0	1	2	3	4	5	6	▬	8	9
6	0	1	2	3	4	5	▬	7	8	9
2	0	1	▬	3	4	5	6	7	8	9

SECTION A

Sample

1 a 1 b 2 c 3 d 4 e 5	19 a 1 b 2 c 3 d 4 e 5	37 a 1 b 2 c 3 d 4 e 5	55 a 1 b 2 c 3 d 4 e 5
2 a 1 b 2 c 3 d 4 e 5	20 a 1 b 2 c 3 d 4 e 5	38 a 1 b 2 c 3 d 4 e 5	56 a 1 b 2 c 3 d 4 e 5
3 a 1 b 2 c 3 d 4 e 5	21 a 1 b 2 c 3 d 4 e 5	39 a 1 b 2 c 3 d 4 e 5	57 a 1 b 2 c 3 d 4 e 5
4 a 1 b 2 c 3 d 4 e 5	22 a 1 b 2 c 3 d 4 e 5	40 a 1 b 2 c 3 d 4 e 5	58 a 1 b 2 c 3 d 4 e 5
5 a 1 b 2 c 3 d 4 e 5	23 a 1 b 2 c 3 d 4 e 5	41 a 1 b 2 c 3 d 4 e 5	59 a 1 b 2 c 3 d 4 e 5
6 a 1 b 2 c 3 d 4 e 5	24 a 1 b 2 c 3 d 4 e 5	42 a 1 b 2 c 3 d 4 e 5	60 a 1 b 2 c 3 d 4 e 5
7 a 1 b 2 c 3 d 4 e 5	25 a 1 b 2 c 3 d 4 e 5	43 a 1 b 2 c 3 d 4 e 5	61 a 1 b 2 c 3 d 4 e 5
8 a 1 b 2 c 3 d 4 e 5	26 a 1 b 2 c 3 d 4 e 5	44 a 1 b 2 c 3 d 4 e 5	62 a 1 b 2 c 3 d 4 e 5
9 a 1 b 2 c 3 d 4 e 5	27 a 1 b 2 c 3 d 4 e 5	45 a 1 b 2 c 3 d 4 e 5	63 a 1 b 2 c 3 d 4 e 5
10 a 1 b 2 c 3 d 4 e 5	28 a 1 b 2 c 3 d 4 e 5	46 a 1 b 2 c 3 d 4 e 5	64 a 1 b 2 c 3 d 4 e 5
11 a 1 b 2 c 3 d 4 e 5	29 a 1 b 2 c 3 d 4 e 5	47 a 1 b 2 c 3 d 4 e 5	65 a 1 b 2 c 3 d 4 e 5
12 a 1 b 2 c 3 d 4 e 5	30 a 1 b 2 c 3 d 4 e 5	48 a 1 b 2 c 3 d 4 e 5	66 a 1 b 2 c 3 d 4 e 5
13 a 1 b 2 c 3 d 4 e 5	31 a 1 b 2 c 3 d 4 e 5	49 a 1 b 2 c 3 d 4 e 5	67 a 1 b 2 c 3 d 4 e 5
14 a 1 b 2 c 3 d 4 e 5	32 a 1 b 2 c 3 d 4 e 5	50 a 1 b 2 c 3 d 4 e 5	68 a 1 b 2 c 3 d 4 e 5
15 a 1 b 2 c 3 d 4 e 5	33 a 1 b 2 c 3 d 4 e 5	51 a 1 b 2 c 3 d 4 e 5	69 a 1 b 2 c 3 d 4 e 5
16 a 1 b 2 c 3 d 4 e 5	34 a 1 b 2 c 3 d 4 e 5	52 a 1 b 2 c 3 d 4 e 5	70 a 1 b 2 c 3 d 4 e 5
17 a 1 b 2 c 3 d 4 e 5	35 a 1 b 2 c 3 d 4 e 5	53 a 1 b 2 c 3 d 4 e 5	71 a 1 b 2 c 3 d 4 e 5
18 a 1 b 2 c 3 d 4 e 5	36 a 1 b 2 c 3 d 4 e 5	54 a 1 b 2 c 3 d 4 e 5	72 a 1 b 2 c 3 d 4 e 5

SECTION B

73 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	90 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
74 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	91 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
75 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	92 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
76 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	93 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
77 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	94 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
78 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	95 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
79 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	96 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
80 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	97 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
81 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	98 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
82 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	99 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
83 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	100 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
84 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	101 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
85 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	102 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
86 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	103 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
87 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	104 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
88 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10	105 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10
89 a 1 b 2 c 3 d 4 e 5	f 6 g 7 h 8 i 9 j 10		

CLARK COUNTY SCHOOL DISTRICT
LAS VEGAS, NEVADA

MATHEMATICS CONCEPTS TESTS

Basic Test: Level Four

Answer Key

SCORING KEY

MATHEMATICS CONCEPTS TEST

Basic Test: Level Four

Part I

1. The set of △'s in this collection △○□△○△ has

   a. 6 members b. 2 members [✓ c.] 3 members d. 4 members

2. Which shows a pair of equivalent sets?

   [✓ a.] {a, c, 4} and {cow, horse, dog}

   b. {a, c, 4} and {cow}

   c. {cow, horse, dog} and {cow}

   d. {a, c, 4} and {a, c}

3. One horse has

   a. 8 feet b. 5 feet c. 10 feet [✓ d.] 4 feet

4. Which set has no members?

   a. The set of all students with black hair

   b. The set of all birds with wings

   [✓ c.] The set of all birds with three wings

   d. The set of all brown haired students in the sixth grade.

5. The cardinal number of this set {2, △, 4, □} is

   a. 5 [✓ b.] 4 c. 3 d. fourth

6. A subset of all Ford automobiles is

[✓ a.] All blue Ford automobiles

b. All Cadillacs

c. All Fords and all Buicks

d. All automobiles

7. Which pair of numerals come before and after 1910?

[✓ a.] 1909, ________, 1911

b. 1908, ________, 1909

c. 1911, ________, 1912

d. 1909, ________, 1910

8. $R = \{7, 5, 8, 3, 1, 4, 2\}$

How many odd numbers are there in set R?

a. 0 b. 7 c. 3 [✓ d.] 4

9. Which set of numerals is arranged from greatest to least?

a. 0, 5, 10, 100, 2000

b. 5, 3, 19, 320, 78

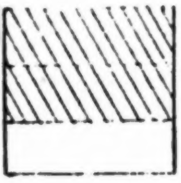
[✓ c.] 1500, 879, 340, 59, 10

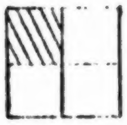
d. 10, 59, 340, 879, 1500

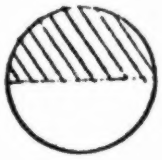
10. Which statement is true?

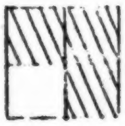
a. $6 = 2 + 3$ b. $5 < 2 + 3$ c. $5 = 6$ [✓ d.] $6 > 2 + 3$

11. Which model shows $\frac{2}{3}$?

[✓ a.] 

b. 

c. 

d. 

12. Which statement is true?

a. $\frac{2}{3} < \frac{4}{6}$ b. $\frac{2}{3} > \frac{4}{6}$ [✓ c.] $\frac{2}{3} = \frac{4}{6}$ d. $\frac{2}{3} \neq \frac{4}{6}$

13. The third object in this row ○ △ □ ▭ is a square. "Third" is

a. a cardinal number

[✓ b.] an ordinal number

c. neither cardinal nor ordinal

14. Which is not a name for 12?

a. 4 X 3 b. 2 X 6 c. 5 + 3 + 4 [✓ d.] 14 - 3

15. Two thousand, four hundred six =

a. 246 b. 2,046 [✓ c.] 2,406 d. 20,406

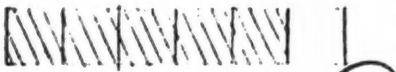
16. In the numeral 86,352, the six names

a. six million

b. sixty eight

[✓ c.] six thousand

d. eighty six

17. This model  shows

a. $\frac{6}{5}$ b. $\frac{1}{5}$ [✓ c.] $\frac{5}{6}$ d. $\frac{4}{5}$

18. In $\frac{3}{4}$

a. 3 is the denominator

b. 4 is the addend

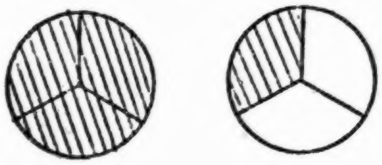
c. 4 is the numerator

[✓ d.] 4 is the denominator

19. The simplest form (lowest terms) of the fraction $\frac{10}{20}$ is

[✓ a.] $\frac{1}{2}$ b. $\frac{5}{10}$ c. $\frac{2}{1}$ d. $\frac{3}{4}$

20. These models show:



a. $\frac{2}{3}$ [✓ b.] $1\frac{1}{3}$ c. $1\frac{1}{4}$ d. $\frac{4}{5}$

21. 3271 rounded to the nearest hundred is

a. 3270 b. 3200 [✓ c.] 3300 d. 3000

22. If 243 + ☐ = 762, then ☐ =

a. 1005 [✓ b.] 519 c. 243 d. 762

23. $\begin{array}{r} 347 \\ -124 \\ \hline 223 \end{array}$ Which of the items below is a check of the answer to this problem?

a. $\begin{array}{r} 124 \\ -223 \\ \hline 101 \end{array}$ b. $\begin{array}{r} 223 \\ -124 \\ \hline 99 \end{array}$ c. $\begin{array}{r} 347 \\ \times 124 \\ \hline 43{,}028 \end{array}$ [✓ d.] $\begin{array}{r} 124 \\ +223 \\ \hline 347 \end{array}$

24. Which arrangement seems easiest for adding these numbers?

a. 9 + 8 + 1 + 2

b. 8 + 9 + 1 + 2

[✓ c.] 8 + 2 + 9 + 1

d. 9 + 2 + 1 + 8

25. 124 + ☐ = 124 − ☐

a. ☐ = 1 b. ☐ = 10 c. ☐ = 100 [✓ d.] ☐ = 0

26. Solve: $\begin{array}{r} 62{,}018 \\ -49{,}325 \\ \hline \square \end{array}$

[✓ a.] ☐ = 12,693

b. ☐ = 62,018

c. ☐ = 27,313

d. ☐ = 11,130

27. Solve:

$$\begin{array}{r} 3946 \\ +\,2473 \\ \hline \square \end{array}$$

[✓ a.] ☐ = 6,419

b. ☐ = 5,319

c. ☐ = 7,429

d. ☐ = 6,409

28. 75 - 21 = ☐

a. ☐ = 50 [✓ b.] ☐ = 54 c. ☐ = 96 d. ☐ = 44

29. 132 + 146 = ☐

a. ☐ = 287 b. ☐ = 178 c. ☐ = 288 [✓ d.] ☐ = 278

30. 45☐9 = 5 What symbol placed in the box would make this statement true?

a. + b. − c. X [✓ d.] ÷

31. To make this statement true, 42 X ☐ = ☐ X 42, ☐ can be

[✓ a.] any number

b. 1 only

c. zero only

d. 42 only

32. To make this statement true, 3 X (6 X ☐) = (3 X 6) X ☐ can be

[✓ a.] any number

b. 1 only

c. zero only

d. 42 only

33. Which grouping seems to make this problem easiest to solve?

a. (5 X 7) X 2 = 70

b. (7 X 2) X 5 = 70

[✓ c.] (2 X 5) X 7 = 70

d. 2 X (5 X 7) = 70

34. 52 ÷ ☐ = 52 X ☐ is true for ☐ =

a. any number b. 0 only c. 52 only [✓ d.] 1 only

35. 437 X 0 = ☐

[✓ a.] ☐ = 0 b. ☐ = 437 c. ☐ = 10 d. ☐ = 1

36. 3 X 123 =

a. (3 X 1) + (3 X 2) + (3 X 3)

b. (3 X 12) + (3 X 3)

c. 363

[✓ d.] (3 X 100) + (3 X 20) + (3 X 3)

37. (40 X 32) + (8 X 32) = ☐ X 32

a. ☐ = 40 [✓ b.] ☐ = 48 c. ☐ = 84 d. ☐ =8

38. 250 X 10 =

[✓ a.] 2,500 b. 25 c. 250 d. 25,000

39. Solve:

213
x21

a. 4573 b. 5473 [✓ c.] 4473 d. 4463

40. Solve:

$$\begin{array}{r} 49 \\ \times 35 \\ \hline \end{array}$$

a. 1825 [✓ b] 1715 c. 2715 d. 1705

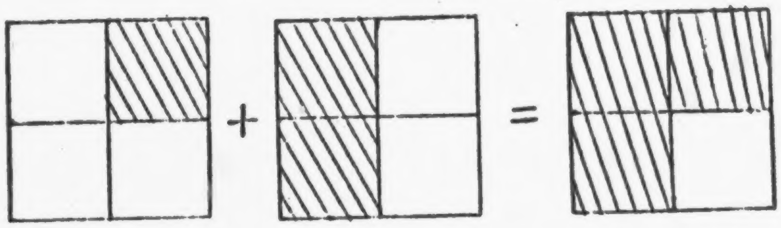
41. Solve: $15\overline{)240}$

[✓ a.] 16 b. 16 r5 c. 15 r5 d. 15

42. Solve: $21\overline{)6190}$

a. 294 b. 295 r6 c. 285 r6 [✓ d.] 294 r16

43. These models show that:



a. $\frac{1}{4}+\frac{2}{4}=\frac{1}{2}$ [✓ b.] $\frac{1}{4}+\frac{2}{4}=\frac{3}{4}$ c. $\frac{1}{4}+\frac{2}{4}=\frac{3}{8}$ d. $1+2=\frac{3}{4}$

44. Find the sum

$$\begin{array}{r} \$75.02 \\ 16.98 \\ +17.50 \\ \hline \end{array}$$

[✓ a.] $109.50 b. $99.50 c. $109.52 d. $119.60

45. Find the difference

$$\begin{array}{r} \$123.00 \\ -95.37 \\ \hline \end{array}$$

a. $27.53 b. $28.63 c. $26.63 [✓ d.] $27.63

46. The set of all points in a plane two inches from a given point is:

a. a two inch square

b. a triangle

[✓ c.] a circle

d. a ray

47. The set of points contained in two rays with a common end point is

a. another ray

[✓ b.] an angle

c. a circle

d. a triangle

48. □ △ ▱ ⬡ each of these figures is a

a. a circle

b. diagonal

c. rectangle

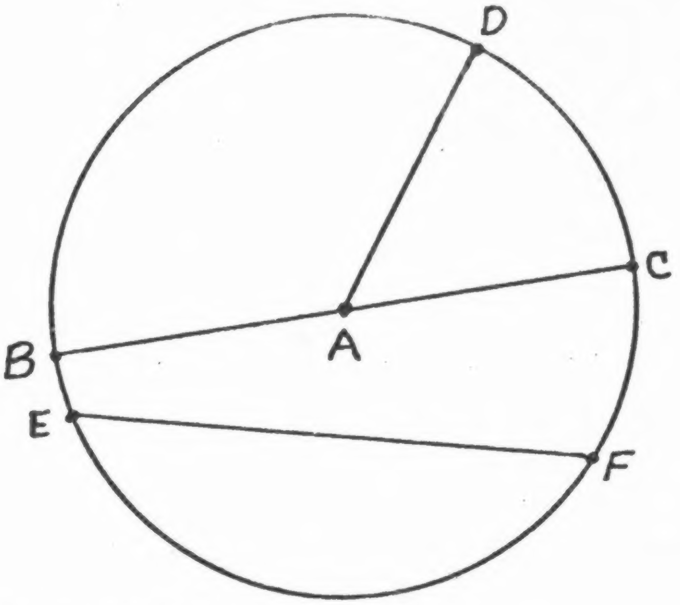
[✓ d.] polygon

49. Parallel lines have ________ point(s) in common?

[✓ a.] 0 b. 1 c. 2 d. many

50. Two intersecting lines have ________ point(s) in common?

a. 0 [✓ b.] 1 c. 2 d. many



51. In the circle above, point A is

a. a chord b. a diameter c. a radius [✓ d.] the cente

52. In the circle above $\overline{BC}$ is

a. a diagonal [✓ b.] a diameter c. a radius d. the cent

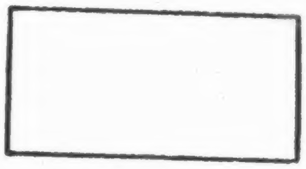
53. In the circle above $\overline{AD}$ is

a. a chord b. a diameter [✓ c.] a radius d. the cente

54. In the circle above, $\overline{EF}$ is

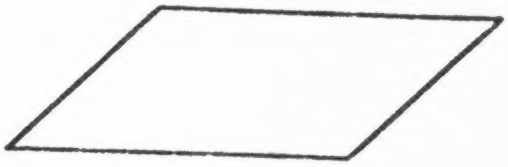
[✓ a.] a chord b. a diameter c. a radius d. the cente

55. What is the name of this quadrilateral?



a. triangle [✓ b.] rectangle c. square d. diagonal

56. What is the name of this quadrilateral?



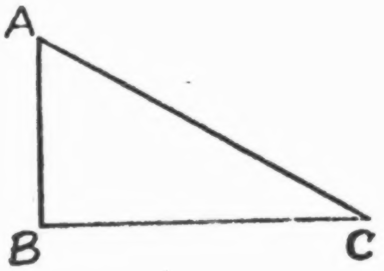
a. rectangle

b. triangle

c. square

[✓ d.] parallelogram

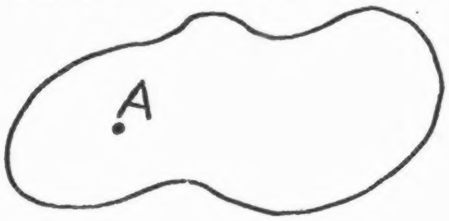
57.



Angle ABC is

[✓ a.] a right angle b. an acute angle c. an obtuse angle d. a

58. In this simple closed curve, point A is:



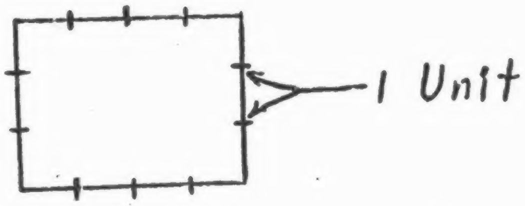
a. in the exterior

[✓ b.] in the interior

c. parallel to the curve

d. on the perimeter

59. The area of this rectangle is



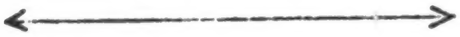
a. 14 square units

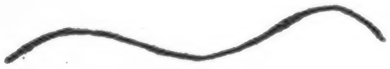
b. 15 square units

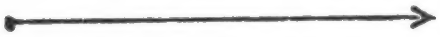
[✓ c.] 12 square units

d. 10 square units

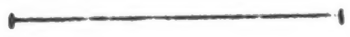
MATCHING: FOR NUMBERS 60 THROUGH 64 MARK THE LETTER OF THE CORRECT ANSWER

60.  a. point D

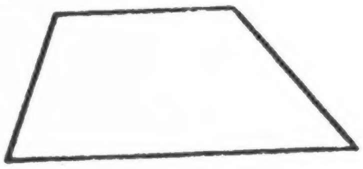
61.  b. path B

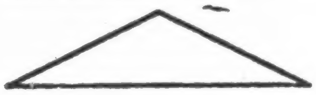
62.  c. ray C

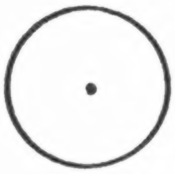
63. d. line A

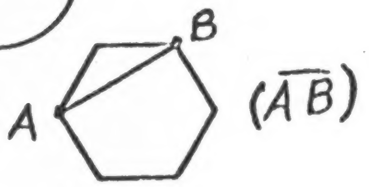
64.  e. line segment E

MATCHING: FOR NUMBERS 65 THROUGH 69 MARK THE LETTER OF THE CORRECT ANSWER

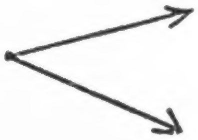
65.  a. angle C

66.  b. triangle B

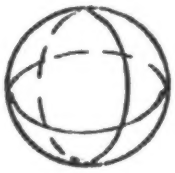
67.  c. quadrilateral D

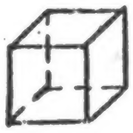
68. 

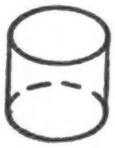
d. circle E

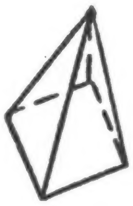
69.  e. diagonal A

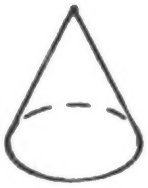
MATCHING: FOR NUMBERS 70 THROUGH 74 MARK THE LETTER OF THE CORRECT ANSWER

70.  a. cube B

71.  b. sphere A

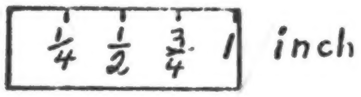
72.  c. cylinder C

73.  d. cone E

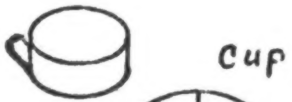
74.  e. pyramid D

75. To measure the length of this line segment you would use

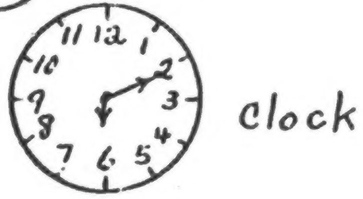
[✓ a.]


$\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{4}$ 1
inch

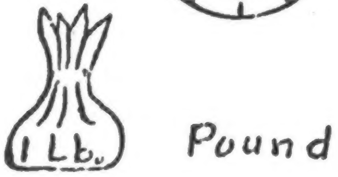
b.



c.



d.



76. The area of your desk top could be named in either

[✓ a.] square feet or square inches

b. inches or feet

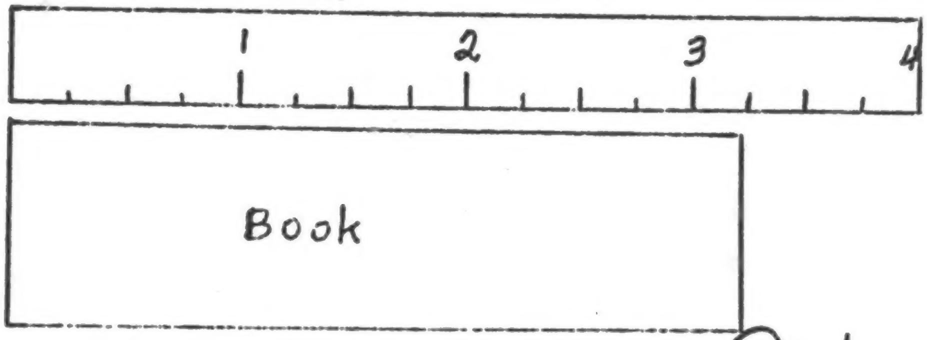
c. pounds or ounces

d. minutes or hours

77. The distance to a city 92 miles away correct to the nearest 10 miles could be

a. 100 miles b. 95 miles [✓ c.] 90 miles d. 85 miles

78. To the nearest $\frac{1}{4}$ inch the length of this book is

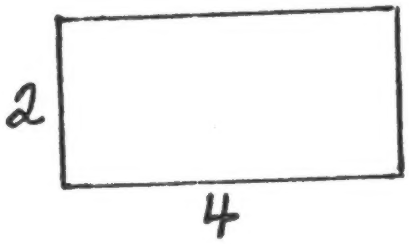


a. $2\frac{3}{4}$ inches b. 3 inches [✓ c.] $3\frac{1}{4}$ inches d. $3\frac{1}{2}$ inches

79. If a triangle is 4 meters on each side, its perimeter is

a. 4 meters b. 16 meters c. 3 meters [✓ d.] 12 meters

80. If a rectangle is four inches wide and two inches high its area is



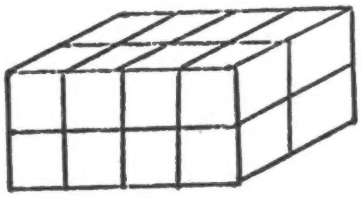
a. 6 meters

[✓ b.] 8 square inches

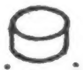
c. 6 square inches

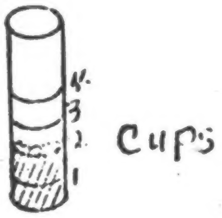
d. 2 gallons

81. If the space figure shown here is four units long, two units wide and two units high, how many cubic units does it contain?



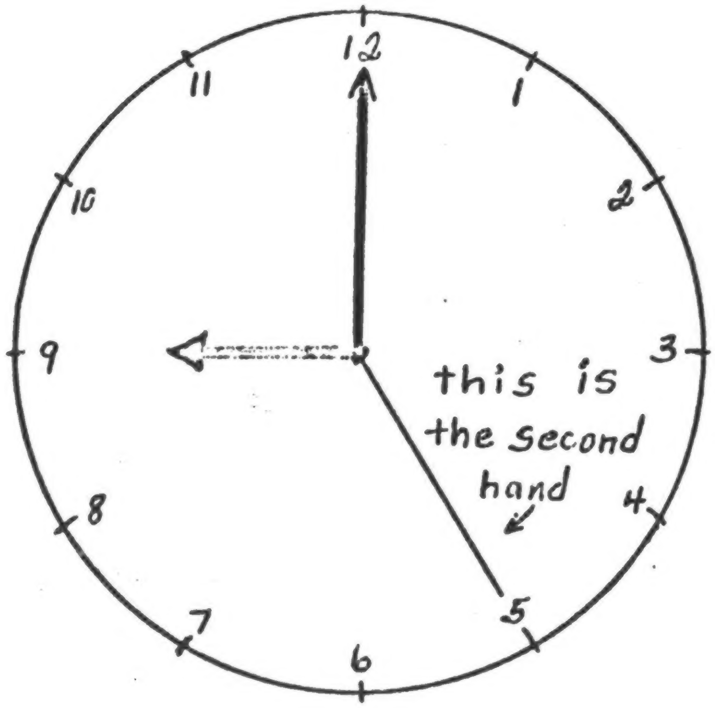
a. 422 b. 4 [✓ c.] 16 d. 8

82. If this  is a cup, then to the nearest cup how much liquid is in this glass container?



a. 1 cup [✓ b.] 2 cups c. 3 cups d. 4 cups

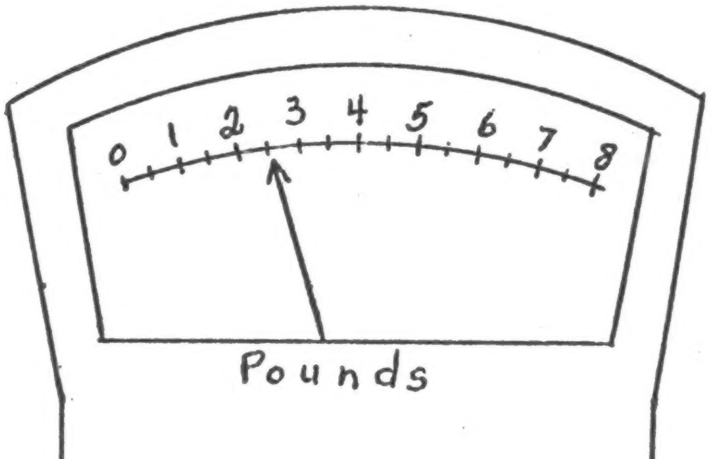
83.


12
1
2
3
4
5
6
7
8
9
10
11
this is the second hand

How many seconds after 9:00 is shown on the above clock?

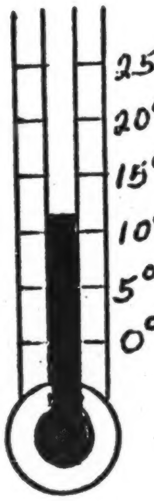
a. 15 seconds b. 20 seconds c. 5 seconds [✓ d.] 25 seconds

84. What is the weight of the block shown on the scale?


0
1
2
3
4
5
6
7
8
Pounds
A
B

[✓ a.] $2\frac{1}{2}$ pounds b. 4 pounds c. 3 pounds d. $3\frac{1}{2}$ pounds

85. This thermometer shows about



[✓ a.] 12° b. 15° c. 10° d. 32°

86. 14 inches is

a. longer than a yard

[✓ b.] longer than a foot

c. shorter than a foot

d. shorter than a centimeter

87. 5 feet 11 inches
+2 feet 9 inches

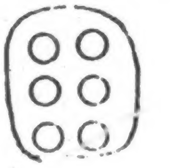
[✓ a.] = 8 feet 8 inches

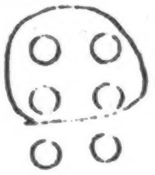
b. = 3 feet 3 inches

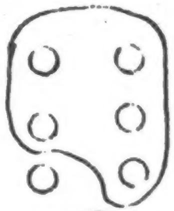
c. = 9 feet

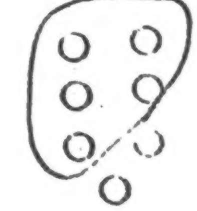
d. = 6 feet 20 inches

88. Which set of O's shows a ring drawn around $\frac{5}{6}$ of the set, a, b, c, or d.


a.


b.


[✓ c.]


d.

89. 78,341 is:

a. Seventy-eight thousand, forty-one

b. Seventy-eight thousand, four hundred thirty-one

[✓ c.] Seventy-eight thousand, three hundred forty-one

d. Seventy thousand, three hundred forty-one

90. 50,000 + 9,000 + 800 + 60 + 2 = ☐

a. ☐ = 509,862

b. ☐ = 50,090,862

[✓ c.] ☐ = 59,862

d. ☐ = 5,986

91. The Roman Numeral for 24 is:

a. XIV [✓ b.] XXIV c. XXVI d. VIXXX

92. The Arabic Numeral for XXXVI is:

[✓ a.] 36 b. 34 c. 63 d. △π

93. Which set of fractions is equivalent to $\frac{1}{2}$?

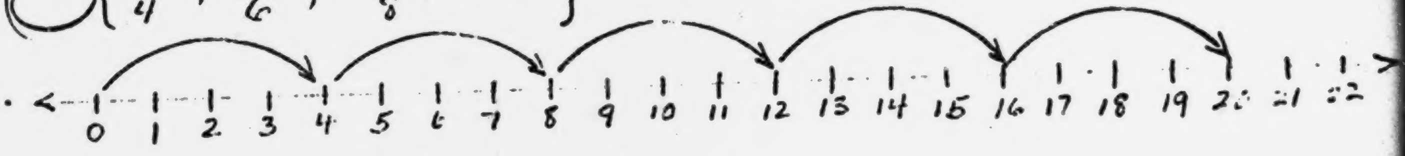
a. $\left\{\frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \ldots\right\}$

b. $\left\{\frac{4}{2}, \frac{6}{3}, \frac{8}{4}, \ldots\right\}$

c. $\left\{\frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \ldots\right\}$

[✓ d.] $\left\{\frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \ldots\right\}$

94.



What fact does this number line show?

[✓ a.] 5 X 4 = 20 b. 2 X 10 = 20 c. 8 + 12 = 20 d. 6 X 4 = 2

95. Which problem shows that 24 ÷ 8 = 3?

[✓ a.]
24
−8 ①
16
−8 ②
8
−8 ③
0

b.
24
−3 ①
21
−3 ②
18
−3 ③
15

c.
24
−12 ①
12
−12 ②
0

96. Which of the following true sentences does not describe this array?

X X X X

X X X X

X X X X

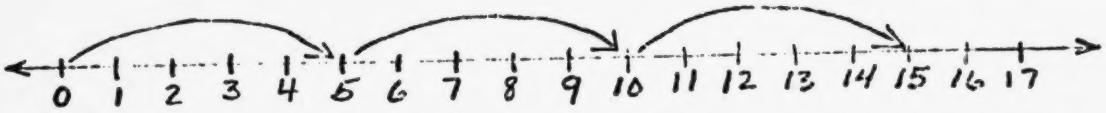
a. 3 X 4 = 12

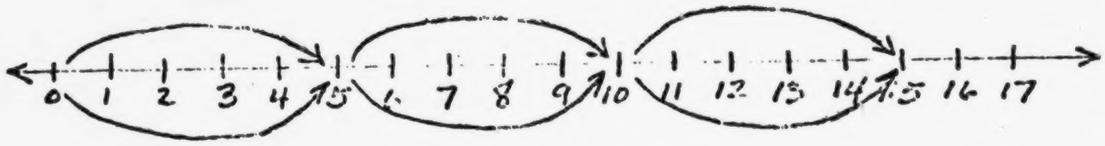
b. 4 X 3 = 12

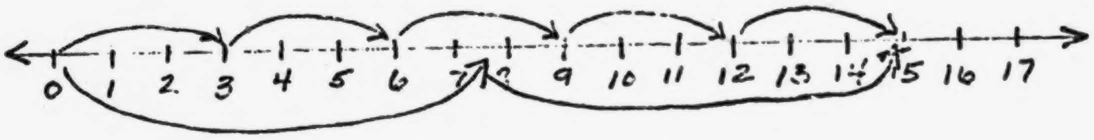
c. 12 ÷ 3 = 4.

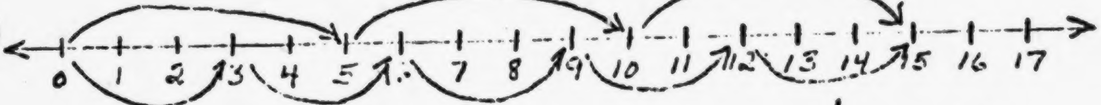
[✓ d.] 6 X 2 = 12

97. Which number line shows that 3 X 5 = 5 X 3

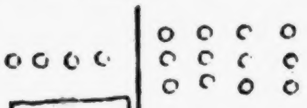
a.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

b.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

c.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

[✓ d.]

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

98. 4×(☐) = (4×1) + (4×3)



From this model, find the value of ☐

a. ☐ = 5 + 3

b. ☐ = 4 + 3

[✓ c.] ☐ = 1 + 3.

d. ☐ = 4 + 1

99. $\frac{3}{8} + \frac{7}{8} =$

[✓ a.] $1\frac{1}{4}$ b. $\frac{1}{2}$ c. $2\frac{1}{4}$ d. $\frac{8}{16}$

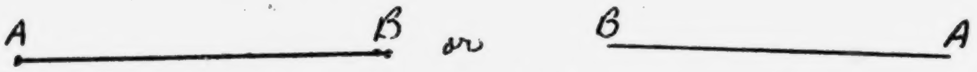
100. $\frac{5}{9} - \frac{2}{9} =$

a. $\frac{7}{9}$ [✓ b.] $\frac{1}{3}$ c. $\frac{3}{0}$ d. $\frac{2}{9}$

Part II

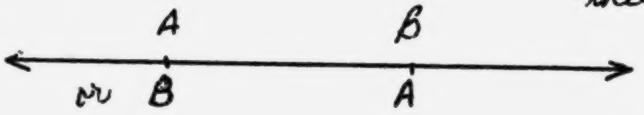
Directions: You are to make several geometric constructions on this page and on the next page. You should use only a straight edge, pencil and in some of them, a compass.

1. Construct a model of a line segment in the space below and label it $\overline{AB}$.



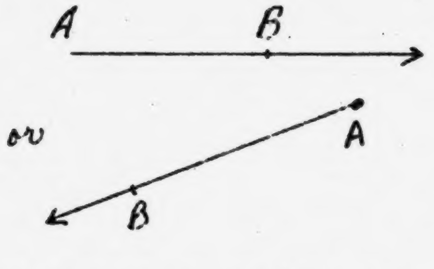
any line segment is acceptable - with or without

2. Construct a model of a line in the space below and label it $\overleftrightarrow{AB}$.



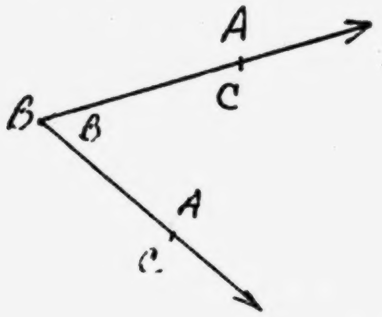
The arrow points are necessary.

3. Construct a model of a ray in the space below and label it $\overrightarrow{AB}$.



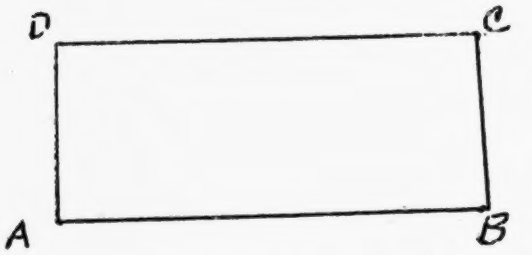
The "A" label must be at the endpoint. The arrow-point is necessary.

4. Construct a model of an angle in the space below and label it ∠ABC



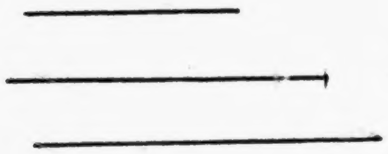
The "B" must be at the vertex of the angle and the rays must have points.

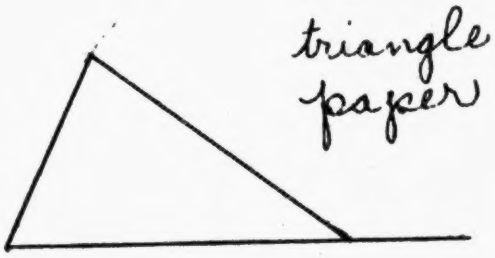
5. Construct a model of a rectangle in the space below and label it ▭ABCD



any quadrilateral that has angles "reasonably" close to being right angles is acceptable.

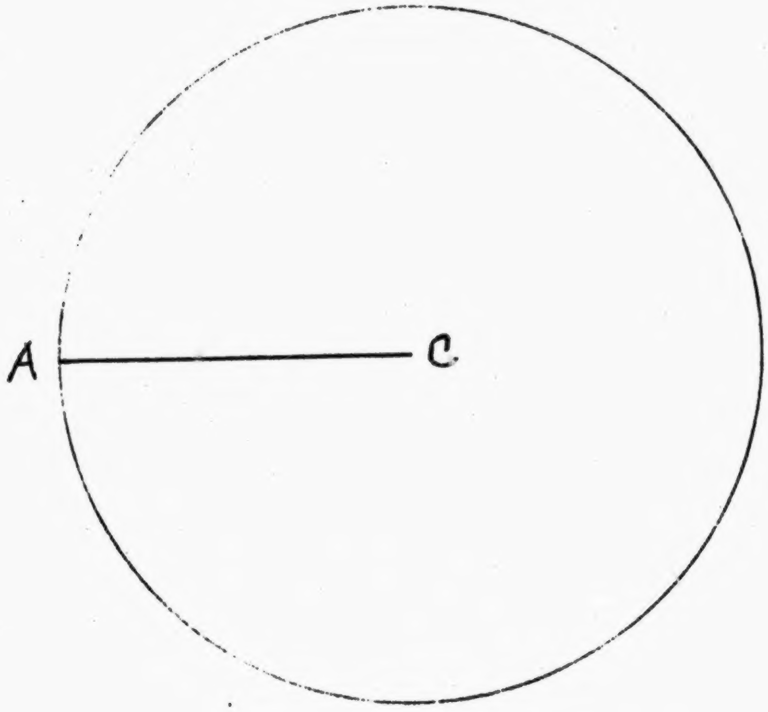
6. Using a compass and a straight edge, construct a triangle having sides the same length as the line segments below. Don't erase your construction marks because they will show whether or not you made the construction correctly.





The orientation of the triangle on the paper is unimportant

7. Construct a circle with its center at point C and a radius of $\overline{AC}$.



Part III

ADDITION TEST

Time limit: 2 minutes

(1) $\begin{array}{r}5\\+4\\\hline 9\end{array}$	(2) $\begin{array}{r}7\\+6\\\hline 13\end{array}$	(3) $\begin{array}{r}8\\+7\\\hline 15\end{array}$	(4) $\begin{array}{r}3\\+3\\\hline 6\end{array}$	(5) $\begin{array}{r}5\\+2\\\hline 7\end{array}$	(6) $\begin{array}{r}7\\+1\\\hline 8\end{array}$
(7) $\begin{array}{r}5\\+5\\\hline 10\end{array}$	(8) $\begin{array}{r}9\\+4\\\hline 13\end{array}$	(9) $\begin{array}{r}7\\+0\\\hline 7\end{array}$	(10) $\begin{array}{r}6\\+9\\\hline 15\end{array}$	(11) $\begin{array}{r}7\\+4\\\hline 11\end{array}$	(12) $\begin{array}{r}6\\+6\\\hline 12\end{array}$
(13) $\begin{array}{r}8\\+3\\\hline 11\end{array}$	(14) $\begin{array}{r}8\\+8\\\hline 16\end{array}$	(15) $\begin{array}{r}5\\+7\\\hline 12\end{array}$	(16) $\begin{array}{r}6\\+3\\\hline 9\end{array}$	(17) $\begin{array}{r}3\\+5\\\hline 8\end{array}$	(18) $\begin{array}{r}9\\+6\\\hline 15\end{array}$
(19) $\begin{array}{r}7\\+7\\\hline 14\end{array}$	(20) $\begin{array}{r}5\\+9\\\hline 14\end{array}$	(21) $\begin{array}{r}3\\+9\\\hline 12\end{array}$	(22) $\begin{array}{r}4\\+3\\\hline 7\end{array}$	(23) $\begin{array}{r}6\\+8\\\hline 14\end{array}$	(24) $\begin{array}{r}2\\+8\\\hline 10\end{array}$

SUBTRACTION TEST

Time limit: 2 minutes

(25)	(26)	(27)	(28)	(29)	(30)
$\begin{array}{r} 11 \\ -\ 9 \\ \hline 2 \end{array}$	$\begin{array}{r} 11 \\ -\ 5 \\ \hline 6 \end{array}$	$\begin{array}{r} 12 \\ -\ 7 \\ \hline 5 \end{array}$	$\begin{array}{r} 14 \\ -\ 5 \\ \hline 9 \end{array}$	$\begin{array}{r} 10 \\ -\ 8 \\ \hline 2 \end{array}$	$\begin{array}{r} 14 \\ -\ 8 \\ \hline 6 \end{array}$
(31)	(32)	(33)	(34)	(35)	(36)
$\begin{array}{r} 12 \\ -\ 4 \\ \hline 8 \end{array}$	$\begin{array}{r} 17 \\ -\ 8 \\ \hline 9 \end{array}$	$\begin{array}{r} 16 \\ -\ 7 \\ \hline 9 \end{array}$	$\begin{array}{r} 6 \\ -\ 0 \\ \hline 6 \end{array}$	$\begin{array}{r} 6 \\ -\ 4 \\ \hline 2 \end{array}$	$\begin{array}{r} 10 \\ -\ 6 \\ \hline 4 \end{array}$
(37)	(38)	(39)	(40)	(41)	(42)
$\begin{array}{r} 18 \\ -\ 9 \\ \hline 9 \end{array}$	$\begin{array}{r} 15 \\ -\ 8 \\ \hline 7 \end{array}$	$\begin{array}{r} 13 \\ -\ 5 \\ \hline 8 \end{array}$	$\begin{array}{r} 10 \\ -\ 3 \\ \hline 7 \end{array}$	$\begin{array}{r} 4 \\ -\ 2 \\ \hline 2 \end{array}$	$\begin{array}{r} 8 \\ -\ 4 \\ \hline 4 \end{array}$
(43)	(44)	(45)	(46)	(47)	(48)
$\begin{array}{r} 9 \\ -\ 7 \\ \hline 2 \end{array}$	$\begin{array}{r} 5 \\ -\ 3 \\ \hline 2 \end{array}$	$\begin{array}{r} 15 \\ -\ 6 \\ \hline 9 \end{array}$	$\begin{array}{r} 3 \\ -\ 2 \\ \hline 1 \end{array}$	$\begin{array}{r} 7 \\ -\ 4 \\ \hline 3 \end{array}$	$\begin{array}{r} 5 \\ -\ 1 \\ \hline 4 \end{array}$

MULTIPLICATION TEST

Time limit: 2 minutes

(49)	(50)	(51)	(52)	(53)	(54)
5	9	8	4	6	7
x 5	x 4	x 6	x 8	x 9	x 4
25	36	48	32	54	28

(55)	(56)	(57)	(58)	(59)	(60)
0	2	6	7	5	3
x 6	x 4	x 6	x 7	x 9	x 7
0	8	36	49	45	21

(61)	(62)	(63)	(64)	(65)	(66)
3	4	6	2	7	8
x 9	x 3	x 8	x 8	x 6	x 7
27	12	48	16	42	56

(67)	(68)	(69)	(70)	(71)	(72)
5	4	9	8	3	1
x 2	x 6	x 9	x 8	x 5	x 4
10	24	81	64	15	4

DIVISION TEST

Time limit: 2 minutes

(73) $\begin{array}{r}2\\2\overline{)4}\end{array}$	(74) $\begin{array}{r}2\\7\overline{)14}\end{array}$	(75) $\begin{array}{r}3\\2\overline{)6}\end{array}$	(76) $\begin{array}{r}5\\4\overline{)20}\end{array}$	(77) $\begin{array}{r}2\\9\overline{)18}\end{array}$	(78) $\begin{array}{r}5\\6\overline{)30}\end{array}$
(79) $\begin{array}{r}5\\7\overline{)35}\end{array}$	(80) $\begin{array}{r}3\\3\overline{)9}\end{array}$	(81) $\begin{array}{r}1\\7\overline{)7}\end{array}$	(82) $\begin{array}{r}8\\2\overline{)16}\end{array}$	(83) $\begin{array}{r}8\\3\overline{)24}\end{array}$	(84) $\begin{array}{r}3\\6\overline{)18}\end{array}$
(85) $\begin{array}{r}4\\4\overline{)16}\end{array}$	(86) $\begin{array}{r}5\\3\overline{)15}\end{array}$	(87) $\begin{array}{r}4\\1\overline{)4}\end{array}$	(88) $\begin{array}{r}6\\9\overline{)54}\end{array}$	(89) $\begin{array}{r}0\\7\overline{)0}\end{array}$	(90) $\begin{array}{r}9\\4\overline{)36}\end{array}$
(91) $\begin{array}{r}8\\3\overline{)24}\end{array}$	(92) $\begin{array}{r}4\\2\overline{)8}\end{array}$	(93) $\begin{array}{r}8\\6\overline{)48}\end{array}$	(94) $\begin{array}{r}5\\9\overline{)45}\end{array}$	(95) $\begin{array}{r}8\\8\overline{)64}\end{array}$	(96) $\begin{array}{r}8\\5\overline{)40}\end{array}$

(Rev. 4-69)

MATHEMATICS CONCEPTS TEST

Basic Test: Level Five

Answer Key and Teachers' Guide

MATHEMATICS CONCEPTS TEST

Basic Test: Level Five
(Grade Five)

ANSWER KEY AND TEACHERS' GUIDE

Description of Test

Items for this mathematics test have been written to assess behavioral objectives proposed by the Mathematics Curriculum Guide, K-6. Multiple choice test items are used where possible. Other behavioral objectives are tested by requiring the student to construct geometric figures. Immediate recall of basic facts if tested by four timed tests. A cross reference of objectives from the Curriculum Guide and items in the test is included with the teachers' guide.

Multiple Choice Test Items

Parts I and II of the test consist of items which can be machine scored directly from the IBM 1230 answer sheets. Students mark answers on answer sheets. The test administrator should inform all students to mark each response carefully with a No. 2 black lead pencil. Answer sheets marked with ink or crayon cannot be machine scored. There should be no extra marks of any type on the answer sheets. In the process of hand scoring, no mark should be placed on the answer sheets until machine scoring has been completed.

Computer Analysis

Computer analysis of test results will develop the following information:

1. Number of items correct, missed, and unanswered for each student.
2. Percentage score for each student.
3. Frequency distribution of percentage scores.
4. Mean score.
5. Standard deviation.
6. Item analysis--biserial correlation.

Identification of Student Answer Sheets

Student name and other information on the upper left hand side of the answer sheet is used for a quick visual identification. However, the computer does not use this data. In the upper right hand section, space is provided to code a student identification number. Data will be processed by the computer in accordance with this number. The recommended procedure for assigning student identification numbers is as follows:

1. Assign each student a different six (6) digit number. If desired the first digits may be zeros, i. e., 000001, 000002, etc. The test results will be recorded numerically by this student number.
2. Record the number vertically in the column of boxes, one digit to a box, starting at the top.
3. Darken in the corresponding digit in the rows to the right of the boxes, one digit to a box.
4. The teacher should keep a record of the number she has assigned to each student so that she can identify the student by that number when the tests are returned.
5. Three answer sheets are required for this test. Care should be taken that each student uses the same number for all answer sheets.
6. Use one answer sheet for Part I (77 items) and another answer sheet for Part II (65 items).
7. Responses to Part III are recorded on the second answer sheet. A third answer sheet must be prepared for Part IV.

Teacher Scored Subtests

Parts III and IV of the test consist of items which must be hand scored by the teacher. After scoring, responses are recorded on answer sheets by the teacher.

Part III consists of eight items. Record the responses for this subtest on the second answer sheet. Mark "a" for a correct response and "b" for an incorrect response. For unanswered questions place no mark on the answer sheet. Mark answers beginning with row 73 in Section B. *Note, Part II consists of 65 items. Therefore, rows 66-72 in Section A of the answer sheet are left blank.

Part IV consists of 104 items. After hand scoring, record the responses on a third answer sheet. Mark "a" for correct, "b" for incorrect and leave blank for unanswered questions.

Time Limits for Tests

This test is designed to be a mastery test. Consequently time limits have been established which will permit over ninety percent of the students to attempt every item on the test. Students should be told that there is no penalty for guessing. It is better to attempt a difficult item than to pass it over.

Administration in three sittings is recommended.

First Sitting	Part I	70 minutes
Second Sitting	Part II	45 minutes
Third Sitting	Part III	20 minutes
Third Sitting	Part IV	11 minutes

Directions to Students

The student is expected to read the test and make a response either on the answer sheet or in the test booklet. No marks should be made in the test booklets for Parts I and II. For Parts III and IV the answer is written in the booklet. Unknown mathematical terms or processes should not be explained to students before or during the test. In Part III students may be informed that a "model" is a "picture." Construction should be done with a straight edge.

Supplies Needed for Testing

1. For Parts I and II each student should have two No. 2 pencils, scratch paper and test and one answer sheet.
2. For Part III students will need a compass and a straight edge, pencils, and one test.
3. For Part IV students will need pencils and copies of the tests.

Norms

District norms will be made available so that student achievement in different schools can be compared. Teachers should be more concerned with the item analysis and cross reference of objectives and test items. A study of test results for any class will provide insights concerning areas where more instruction is needed both for individuals and groups of students.

GRADE FIVE

A CROSS REFERENCE OF OBJECTIVES FROM THE CLARK COUNTY CURRICULUM GUIDE AND ITEMS IN THE MATHEMATICS COVERAGE TEST

CODE: "N" means number strand; "Nu" means numeration strand; "O" means operations strand; "G" means geometry strand; and, "M" means measurement strand.

An example: M-4 means objective #4 in the measurement strand.

OBJECTIVE #	ITEM #
N-1	1
N-2	2
N-3	3
N-4	4
N-5	5
N-6	6
N-7	7
N-8	8
N-9	9
N-10	10
N-11	11
N-12	12
N-13	13
Nu-1	14
Nu-2	15
Nu-3	NC
Nu-4	16
Nu-5	17
Nu-6	18
Nu-7	19
Nu-8	20
Nu-9	21
Nu-10	22
Nu-11	23
Nu-12	24
Nu-13	25
Nu-14	26
Nu-15	27
Nu-16	28
Nu-17	29
Nu-18	30
Nu-19	31
Nu-20	32
Nu-21	33
Nu-22	34
Nu-23	41

OBJECTIVE #	ITEM #
O-1&7	35,36
O-2	37
O-4	38
O-5	39
O-6&7	40,42
O-7&23	43
O-7	44
O-8	45
O-9	46
O-10	47
O-12	48
O-15	49
O-13	50
O-14	51
O-16	52
O-17	53
O-18	54
O-19	55
O-20	56
O-21	57
O-22	NC
O-23	58
O-24	59
O-25	60
O-26	61
O-27	62,63
O-28	64
O-29	NC
O-30	65
O-31	66
O-32	67
O-33	NC
O-34	68
O-35	69
O-36	70
O-37	71,72
O-38	73
O-39	74

O-40	75
O-41	76,77

PART II

OBJECTIVE #	ITEM #
M-1	1-7
M-2&13	9
M-3	10
M-15	10-13
M-5	14
M-6	NC
M-7	15,16
M-8,9,3	17
M-10	18
M-11	19
M-12&4	20
M-13	21
M-14	22
M-15	23
M-16	24,25
G-1	26,27
G-2	28-30
G-1	31,32
G-13	33
G-2	34-42
G-2&3	43-47
G-4	48-55
G-5	56
G-6	57,58
G-7	59
G-8	60
G-9	61
G-11	62
G-12	63,64
G-10	65

OBJECTIVE #	ITEM #
G-14	1,2
G-13,14,15	3-5
G-16	6,7
G-17	8

NC means not covered

LAST NAME (PLEASE PRINT) FIRST MIDDLE INITIAL

Johnson Larry J

SIGNATURE

Mrs R. Roberts

INSTRUCTOR COURSE NO SECTION NO

Laura Dearing 215

SCHOOL NAME SCHOOL NO

Math 1-16-69

NAME OF TEST DATE

Level 5 Part 4

STUDENT IDENTIFICATION NUMBER

WRITE NUMBER HERE	BLACKEN APPROPRIATE DIGIT HERE									
0	●	1	2	3	4	5	6	7	8	9
5	0	1	2	3	4	●	6	7	8	9
1	0	●	2	3	4	5	6	7	8	9
7	0	1	2	3	4	5	6	●	8	9
6	0	1	2	3	4	5	●	7	8	9
2	0	1	●	3	4	5	6	7	8	9

INSTRUCTIONS Please Read Carefully

1. Erase completely any answer you change.
2. Do not write in margins.
3. Use No. 2 pencil and fill box.
4. Make marks heavy and black.
5. For (T) True and (F) False questions, use (1) for true and (2) for false.

SECTION A

Sample

1 a b c d e
2 a b c d e
3 a b c d e
4 a b c d e
5 a b c d e
6 a b c d e
7 a b c d e
8 a b c d e
9 a b c d e
10 a b c d e
11 a b c d e
12 a b c d e
13 a b c d e
14 a b c d e
15 a b c d e
16 a b c d e
17 a b c d e
18 a b c d e
19 a b c d e
20 a b c d e
21 a b c d e
22 a b c d e
23 a b c d e
24 a b c d e
25 a b c d e
26 a b c d e
27 a b c d e
28 a b c d e
29 a b c d e
30 a b c d e
31 a b c d e
32 a b c d e
33 a b c d e
34 a b c d e
35 a b c d e
36 a b c d e
37 a b c d e
38 a b c d e
39 a b c d e
40 a b c d e
41 a b c d e
42 a b c d e
43 a b c d e
44 a b c d e
45 a b c d e
46 a b c d e
47 a b c d e
48 a b c d e
49 a b c d e
50 a b c d e
51 a b c d e
52 a b c d e
53 a b c d e
54 a b c d e
55 a b c d e
56 a b c d e
57 a b c d e
58 a b c d e
59 a b c d e
60 a b c d e
61 a b c d e
62 a b c d e
63 a b c d e
64 a b c d e
65 a b c d e
66 a b c d e
67 a b c d e
68 a b c d e
69 a b c d e
70 a b c d e
71 a b c d e
72 a b c d e

SECTION B

73 a b c d e f g h i j
74 a b c d e f g h i j
75 a b c d e f g h i j
76 a b c d e f g h i j
77 a b c d e f g h i j
78 a b c d e f g h i j
79 a b c d e f g h i j
80 a b c d e f g h i j
81 a b c d e f g h i j
82 a b c d e f g h i j
83 a b c d e f g h i j
84 a b c d e f g h i j
85 a b c d e f g h i j
86 a b c d e f g h i j
87 a b c d e f g h i j
88 a b c d e f g h i j
89 a b c d e f g h i j
90 a b c d e f g h i j
91 a b c d e f g h i j
92 a b c d e f g h i j
93 a b c d e f g h i j
94 a b c d e f g h i j
95 a b c d e f g h i j
96 a b c d e f g h i j
97 a b c d e f g h i j
98 a b c d e f g h i j
99 a b c d e f g h i j
100 a b c d e f g h i j
101 a b c d e f g h i j
102 a b c d e f g h i j
103 a b c d e f g h i j
104 a b c d e f g h i j
105 a b c d e f g h i j

CLARK COUNTY SCHOOL DISTRICT
LAS VEGAS, NEVADA

MATHEMATICS CONCEPTS TESTS

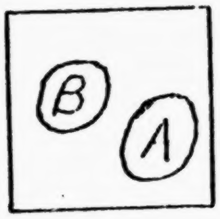
Basic Test: Level Five

Answer Key

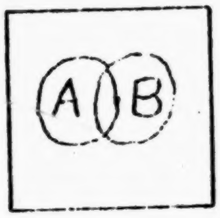
Part I

1. Which of the Venn diagrams below shows the relationship of whole numbers to rational numbers?
Set A = the whole numbers
Set B = the rational numbers

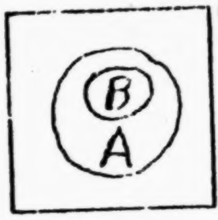
a)



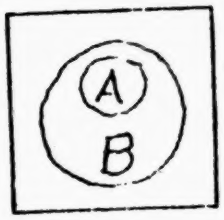
b)



c)



[✓ d)]



2. Which of the following sets is infinite?

a) The set of all fords.

[✓ b)] The set of all counting numbers.

c) The set of all 5th grade boys.

d) The set of all two-headed dogs.

3. The cardinal number of this set is

$$\{\triangle, \square, 4, 6, \bigcirc, 10\}$$

a) 5 b) 10 c) 7 [✓ d)] 6

4. Which pair of numerals come before and after 16,710?

[✓ a)] 16,709, ____________, 16,711

b) 16,700, ____________, 16,702

c) 16,712, ____________, 16,713

d) 16,700, ____________, 16,720

5. R = {12, 9, 8, 7, 25, 2, 16, 15}

The subset of odd numbers in set R is

a) {12, 8, 2, 16}
[✓ b)] {9, 7, 25, 15}
c) {12, 9, 8, 16, 15}
d) {9, 8, 7, 25, 2}

6. Having a million dollars in one bank is the same as having

[✓ a)] A thousand dollars in each of a thousand banks.
b) A hundred dollars in each of a thousand banks.
c) A thousand dollars in each of a hundred banks.
d) A hundred dollars in each of a hundred banks.

7. Which number is a prime number?

a) 26   b) 39   [✓ c)] 47   d) 49

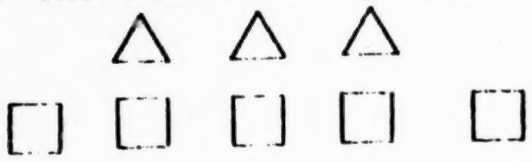
8. Which set of numerals is arranged from greatest to least?

a) {0, 5, 65, 900, 1000}
b) {1600, 1400, 900, 1010, 867}
[✓ c)] {2200, 2165, 2075, 1967, 1821}
d) {5, 10, 20, 70, 90}

9. Which sign makes the statement true? $20 \div 5 \bigcirc 25 \div 5$

[✓ a)] $<$ b) $>$ c) $=$ d) $\div$

10. What is the ratio of squares to triangles?



a) $\frac{3}{4}$ [✓ b)] $\frac{5}{3}$ c) $\frac{4}{3}$ d) $\frac{3}{5}$

11. Give the whole number for this set of equivalent fractions.

$$\left\{\frac{8}{1}, \frac{16}{2}, \frac{32}{4}, \frac{40}{5}, \ldots\right\}$$

a) 5 [✓ b)] 8 c) 16 d 4

12. A class is composed of 10 girls and 20 boys. Which of the following statements is false?

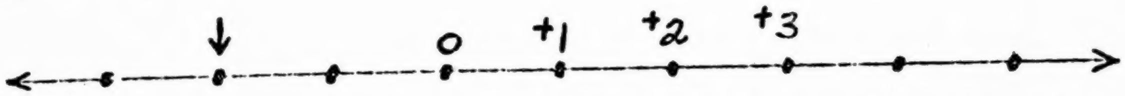
a) The ratio of boys to girls is 2 to 1.

b) $\frac{2}{3}$ of the class is boys.

c) The ratio of girls to boys can be written 1:2.

[✓ d)] $\frac{3}{2}$ of the class is girls.

13.



The arrow indicates what number on the number line?

a) $^{-}1$ b) $^{+}2$ [✓ c)] $^{-}2$ d) $^{+}3$

14. Which of the following is NOT a name for the number $6\frac{7}{10}$?

[✓ a)] (2 + 3 + .7) b) $\frac{67}{10}$ c) 6.7 d) (6 + .7)

15. Another name for the numeral three million, nine thousand, five is

a) 3,900,500 b) 390,005 [✓ c)] 3,009,005 d) 3,090,050

16. Another name for the numeral 467,304 is

[✓ a)] four hundred sixty-seven thousand, three hundred four.

b) four million, sixty-seven thousand, three hundred four.

c) forty-six thousand, seven hundred thirty-four.

d) four hundred sixty-seven thousand, thirty-four.

17. In the numeral 1,398,671 the digit nine is in the

a) hundreds' place

b) millions' place

c) hundred thousands' place

[✓ d)] ten thousands' place

18. In the numeral below, the digits in period 3 tell the number of

6 7 1, 4 9 2, 8 7 1
Period 3 Period 2 Period 1

a) billions

[✓ b) millions]

c) thousands

d) ones

19. Which is another name for the numeral 298,461?

[✓ a) (2x100,000)+(9x10,000)+(8x1000)+(4x100)+(6x10)+(1x1)]

b) (2x10,000)+(9x1000)+(8x100)+(4x10)+(1x1)

c) (2x100,000)+(7x10,000)+(8x1000)+(4x100)+(6x10)+(1x1)

d) (2x1,000,000)+(9x100,000)+(8x10,000)+(4x1000)+(6x100)+(1x10)

20. Which of the following is another name for the numeral 473,601,986?

a) (473x100,000)+(601x100)+(986x10)

b) (473x10,000,000)+(601x10,000)+(986x1)

[✓ c) (473x1,000,000)+(601x1000)+(986x1)]

d) (473x10,000)+(601x1,000)+(986x10)

21. Which of the following shows the number 60 as a product of prime numbers?

[✓ a) 2 x 2 x 3 x 5]

b) 4 x 5 x 3

c) 2 x 2 x 3 x 3 x 5

d) 2 x 6 x 5

22. The Roman numeral name for the base ten number 264 is:

a) LXIV

[✓ b)] CCLXIV

c) CLXIV

d) CCLXVI

23. The base ten name for the Roman numeral CXI is:

a) 61 b) 101 [✓ c)] 111 d) 109

24. Given a Roman numeral XXX and a base ten numeral 333:

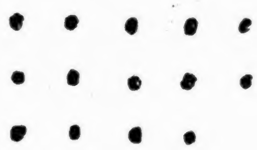
[✓ a)] XXX = 10 + 10 + 10

b) 333 = 3 + 3 + 3

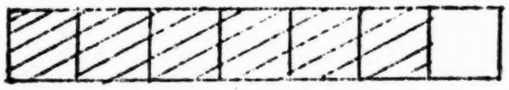
c) Each "X" has a different value depending on its place in the numeral

d) The two numerals name the same number

25. The base five numeral for the following set of dots is:



[✓ a)] 24_{five} b) 14_{five} c) 33_5 d) 30_{five}

26. This model  shows:

[✓ a)] $\frac{6}{7}$ b) $\frac{7}{6}$ c) $\frac{2}{3}$ d) $\frac{4}{7}$

27. In the fraction $\frac{3}{5}$

a) 3 is the denominator

b) 5 is the addend

c) 5 is the numerator

[✓ d)] 5 is the denominator

28. Which is not another name for the fraction $\frac{7}{8}$?

a) $\frac{14}{16}$ [✓ b)] $\frac{23}{24}$ c) $\frac{28}{32}$ d) $\frac{35}{40}$

29. The simplest form (lowest terms) of the fraction $\frac{18}{24}$ is:

a) $\frac{9}{12}$ b) $\frac{1}{2}$ c) $\frac{2}{3}$ [✓ d)] $\frac{3}{4}$

30. The missing numerator in the following arithmetic sentence $\frac{4}{9} = \frac{?}{18} = \frac{32}{72}$ is:

[✓ a)] 8 b) 16 c) 12 d) 24

31. Another name for the fraction $\frac{25}{7}$ is:

a) $\frac{13}{3}$ [✓ b)] $3\frac{4}{7}$ c) $4\frac{3}{7}$ d) $20\frac{5}{7}$

32. The decimal numeral for the fraction $8\frac{14}{1000}$ is:

a) .814 b) 8.14 [✓ c)] 8.014 d) 8.0014

33. The expanded numeral for the numeral 23.74 is:

[✓ a)] $(2\text{x}10)+(3\text{x}1)+(7\text{x}\frac{1}{10})+(4\text{x}\frac{1}{100})$

b) $(23\text{x}10)+(7\text{x}1)+(4\text{x}\frac{1}{10})$

c) $(2\text{x}10)+(3\text{x}1)+(7\text{x}\frac{1}{100})+(4\text{x}\frac{1}{10})$

d) $(2\text{x}1000)+(3\text{x}100)+(7\text{x}10)+(4\text{x}1)$

34. Which answer lists the correct order of the types of numerals in the following set?

$\left\{\frac{1}{3},\ 2\frac{1}{2},\ .23\right\}$

a) decimal fraction, common fraction, mixed numeral

b) common fraction, decimal fraction, mixed numeral

[✓ c)] common fraction, mixed numeral, decimal fraction

d) mixed numeral, common fraction, decimal fraction

35. If □ + 567 = 1142, then □ =

a) 675 b) 1709 c) 685 [✓ d) 575]

36. If □ − 2456 = 3798, then □ =

a) 1342 [✓ b) 6254] c) 5144 d) 5257

37. 3095
-1843
1252

Which of the items below should be used to check the answer to this problem?

a) 1843
-1252

[✓ b) 1843
+1252]

c) 3095
+1252

d) 1252
-1843

38. Which arrangement seems easiest for adding these numbers?

[✓ a) (17 + 3) + (6 + 4)]

b) (17 + 6) + (3 + 4)

c) (6 + 3) + (17 + 4)

d) (4 + 3) + (6 + 17)

39. 4635 + □ = 4635 − □ To make this statement true, □ can be:

a) any number b) 1 only c) 4635 [✓ d) 0 only]

40. 638,245,079
+ 25,346,942

[✓ a) 663,592,021]

b) 612,898,137

c) 653,581,911

d) 653,592,121

41. The numeral 14.36 rounded to the nearest tenth is

a) 15. b) 14.35 c) 14.3 [✓ d) 14.4]

42. $\begin{array}{r} 900,389,400 \\ -\ \ \ 9,230,099 \\ \hline \end{array}$

a) 909,619,499

b) 901,159,301

[✓ c)] 891,159,301

d) 801,159,311

43. 246 □ 29 = 275 What symbol placed in the box would make this statement true?

[✓ a)] + b) - c) x d) ÷

44. 1832 □ 1802 = 30 What symbol placed in the box would make this statement true?

a) + [✓ b)] - c) x d) ÷

45. ○ × □ = △ Which of the sentences below is not related to this multiplication equation?

a) □ × ○ = △

b) △ ÷ □ = ○

[✓ c)] □ ÷ ○ = △

d) △ ÷ ○ = □

46. Which equation has the same solution as □ x 48 = 240

a) 240 - 48 = □

b) 240 x 48 = □

[✓ c)] 240 ÷ 48 = □

d) 48 ÷ 240 = □

47. $\begin{array}{r} 416 \\ 9\overline{)3744} \end{array}$ Which of the items below should be used to check the answer to this problem?

[✓ a)] $\begin{array}{r} 416 \\ \times\ \ 9 \\ \hline \end{array}$ b) $\begin{array}{r} 416 \\ +\ \ 9 \\ \hline \end{array}$ c) $\begin{array}{r} 3744 \\ +\ 416 \\ \hline \end{array}$ d) $\begin{array}{r} 3744 \\ -\ 416 \\ \hline \end{array}$

48. Which form makes 1463 x 468 = □ easiest to compute?

a) 468
x1463

[✓ b)] 1463
x 468

49. 6000 x 50 =

a) 3000 b) 30,000 [✓ c)] 300,000 d) 3,000,000

50. 218
x306
1308
65400
66,708

Which of the items below could be used to check the answer to this problem?

[✓ a)] 306
X218

b) 306
-218

c) 65,400
+ 306

d) 66,708
-65,400

51. Which grouping seems to make this problem easiest to solve?

[✓ a)] 67 x (25 x 4) =

b) (67 x 25) x 4 =

c) (67 x 4) x 25 =

d) (4 x 67) x 25 =

52. 376 ÷ □ = 376 x □ To make this statement true, □ can be

a) any number [✓ b)] 1 only c) 0 only d) 376

53. 0 = 4890 x □

a) □ = 4890 b) □ = 48,900 [✓ c)] □ = 0 d) □ = 10

54. Which problem cannot be solved?

a) 0 ÷ 4 b) 4 ÷ 4 [✓ c)] 4 ÷ 0 d) 1 ÷ 1

55. 37 x 23 = (37 x □) + (37 x 3)

a) □ = 10 b) □ = 3 [✓ c)] □ = 20 d) □ = 23

56. 9073
x 286

[✓ a)] 2,594,878

b) 9359

c) 2,579,268

d) 145,168

57. $46\overline{)36,836}$

a) 801 b) 799 r72 [✓ c)] 800 r36 d) 900 r36

58. 23 □ 23 = 529 What symbol placed in the box would make this statement true?

a) + b) - [✓ c)] x d) ÷

59. Find the average of this set of numbers. {68, 82, 93}

[✓ a)] 81 b) 79 c) 82 d) 88

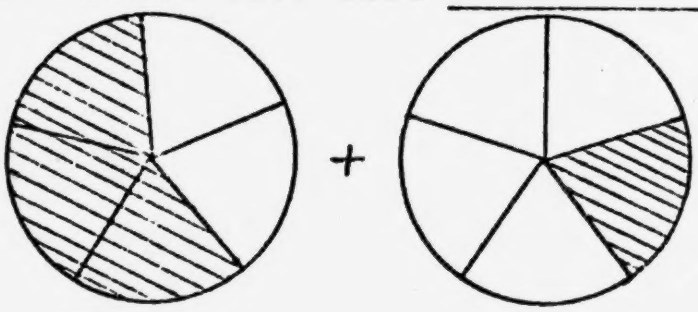
60. Give the greatest common factor of this set of numbers.
{3, 12, 18}

a) 6 [✓ b)] 3 c) 36 d) 24

61. Give the least common multiple of this set of numbers.
{8, 12}

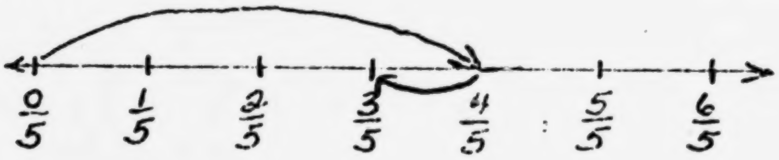
a) 2 b) 8 c) 12 [✓ d)] 24

62. The shaded part of these models show that ________________.



a) $\frac{3}{4}+\frac{1}{4}=\frac{4}{8}$
b) $\frac{3}{5}+\frac{1}{5}=\frac{4}{10}$
[✓ c) $\frac{3}{5}+\frac{1}{5}=\frac{4}{5}$]
d) $\frac{3}{5}+\frac{4}{5}=1\frac{2}{5}$

63. This number line shows that:



a) $\frac{0}{5}+\frac{4}{5}=\frac{3}{5}$
b) $\frac{4}{5}+\frac{3}{5}=\frac{0}{5}$
c) $\frac{4}{5}-\frac{3}{5}=\frac{1}{5}$
[✓ d) $\frac{4}{5}-\frac{1}{5}=\frac{3}{5}$]

64. Which equation has the same solution as $\square+\frac{3}{4}=\frac{7}{8}$

a) $\frac{3}{4}+\frac{7}{8}=\square$
[✓ b) $\frac{7}{8}-\frac{3}{4}=\square$]
c) $\frac{3}{4}-\frac{7}{8}=\square$
d) $\frac{7}{8}+\frac{3}{4}=\square$

65. $\frac{1}{2}+\square=\square+\frac{1}{2}$, is true for $\square$ equal to

[✓ a) any number] b) 1 only c) 0 only d) never true

66. $\left(\frac{1}{4}+\square\right)+\frac{1}{2}=\frac{1}{4}+\left(\square+\frac{1}{2}\right)$ is true for $\square$ equal to:

[✓ a) any number] b) 1 only c) 0 only d) never true

67. Which grouping seems to make this problem easiest to solve?

a) $\left(\frac{3}{4}+\frac{1}{8}\right)+\frac{1}{4}=$
b) $\frac{3}{4}+\left(\frac{1}{8}+\frac{1}{4}\right)=$
c) $\left(\frac{1}{8}+\frac{3}{4}\right)+\frac{1}{4}=$
[✓ d) $\frac{1}{8}+\left(\frac{3}{4}+\frac{1}{4}\right)=$]

68. $\frac{14}{15} - \frac{6}{15} =$

a) $1\frac{5}{15}$ b) $\frac{20}{15}$ c) $\frac{3}{5}$ [✓ d)] $\frac{8}{15}$

69. $\frac{3}{4} + \frac{1}{6} =$

[✓ a)] $\frac{11}{12}$ b) $\frac{4}{10}$ c) $\frac{4}{12}$ d) $\frac{4}{6}$

70. $12\frac{13}{18}$
$+\,7\frac{1}{2}$

a) $19\frac{14}{18}$ [✓ b)] $20\frac{2}{9}$ c) $19\frac{7}{9}$ d) $20\frac{14}{20}$

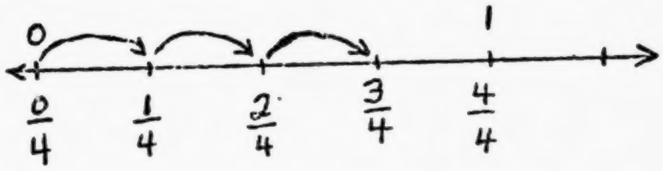
71. 26.4 + 3.44 =

a) 26.744 b) 60.8 [✓ c)] 29.84 d) 30.04

72. \$5 − \$2.05 =

a) \$3.95 b) \$3.05 [✓ c)] \$2.95 d) \$2

73. This number line shows that:



a) $\frac{0}{4} \times \frac{1}{4} = \frac{3}{4}$

[✓ b)] $3 \times \frac{1}{4} = \frac{3}{4}$

c) $4 \times \frac{1}{4} = \frac{3}{4}$

d) $3 \times \frac{1}{4} = \frac{1}{12}$

74. Which equation has the same solution as $\frac{5}{48} \div \frac{1}{8} = \square$

a) $\square + \frac{1}{8} = \frac{5}{48}$

b) $\frac{1}{8} \div \frac{5}{48} = \square$

c) $\square \div \frac{5}{48} = \frac{1}{8}$

[✓ d)] $\square \times \frac{1}{8} = \frac{5}{48}$

75. $\frac{2}{3} \times \frac{4}{5} =$

a) $\frac{6}{8}$ b) $\frac{6}{15}$ [✓ c)] $\frac{8}{15}$ d) $\frac{16}{15}$

76.
$$\begin{array}{r} \$6.28 \\ \times \quad 36 \\ \hline \end{array}$$

a) $22.60 [✓ b)] $226.08 c) $222.68 d) $188.40

77. $47\,\overline{)\$9.87}$

[✓ a)] $.21 b) $2.10 c) $2.01 d) $ .27

Part II

1. Mary bought material for a new dress by the ____________.

a) pound b) miles c) ounce [✓ d) yard]

2. The distance from New York to Las Vegas is measured in _________

a) pounds [✓ b) miles] c) ounces d) yards

3. Perfume is sold by the ___________.

a) pound b) miles [✓ c) ounce] d) yard

4. The butcher sells meat by the _____________.

[✓ a) pound] b) miles c) ounce d) yard

5. We measure speed with a ________________.

a) ruler [✓ b) speedometer] c) miles d) clock

6. Time is measured with a ________________.

a) ruler b) speedometer c) miles [✓ d) clock]

7. The area of your desk can be measured in ______________.

a) feet b) inches [✓ c) square inches] d) cubic inches

8. Mr. Smith drives his car at an average speed of 40 M.P.H. How far does he go in 5 hours?

a) 30 miles b) 141 miles [✓ c) 200 miles] d) 8 miles

9. It is colder when the temperature is _______________.

[✓ a) 30° F.] b) 30° C.

10. To the nearest pound 19 lbs. 7 oz. is ______________.

[✓ a) 19 lbs] b) 20 lbs c) 26 lbs

11. 18 inches is:

a) shorter than $\frac{1}{2}$ a yard

b) longer than a yard

c) $\frac{1}{4}$ of a yard

[✓ d) $\frac{1}{2}$ of a yard]

12. A boy 49 inches tall is:

a) shorter than a yardstick

b) about one rod

[✓ c) close to four feet]

d) too tall to measure

13. A meter stick is:

[✓ a) longer than a yard stick]

b) about 12 inches long

c) 4 millimeters

d) $\frac{1}{4}$ of a foot

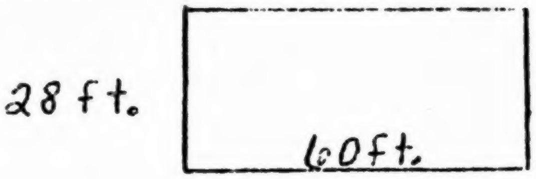
14. Grandfather's garden is 60 feet long and 28 feet wide. The perimeter of his garden is

a) 50 feet

[✓ b) 176 feet]

c) 99 feet

d) 1680 square feet



15. The area of grandfather's garden is (See item #14 above)

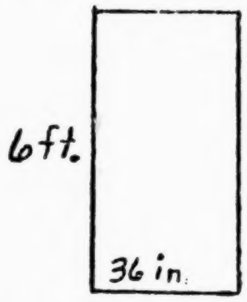
a) 216 square ft. b) 680 square ft. [✓ c) 1680 square feet]

16. The rectangle has a base of 36 inches and an altitude of 6 feet. What is the area?

a) 84 square feet

[✓ b)] 18 square feet

c) 216 square feet

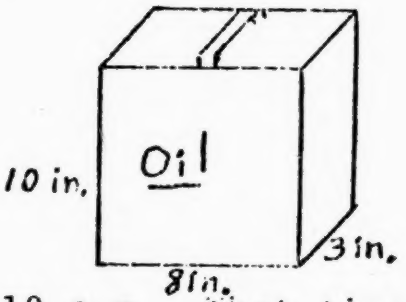


17. A gallon is 231 cubic inches. The container shown here will ____________________.

[✓ a)] hold more than a gallon

b) hold less than a gallon

c) hold exactly one gallon



18. If the time in Las Vegas is 10 a.m., what time is it in New York?

a) 1 a.m. [✓ b)] 1 p.m. c) 7 a.m. d) 7 p.m.

19. The Brooklyn Bridge was completed in 1883. What century was this?

a) 17th Century b) 18th Century [✓ c)] 19th Century

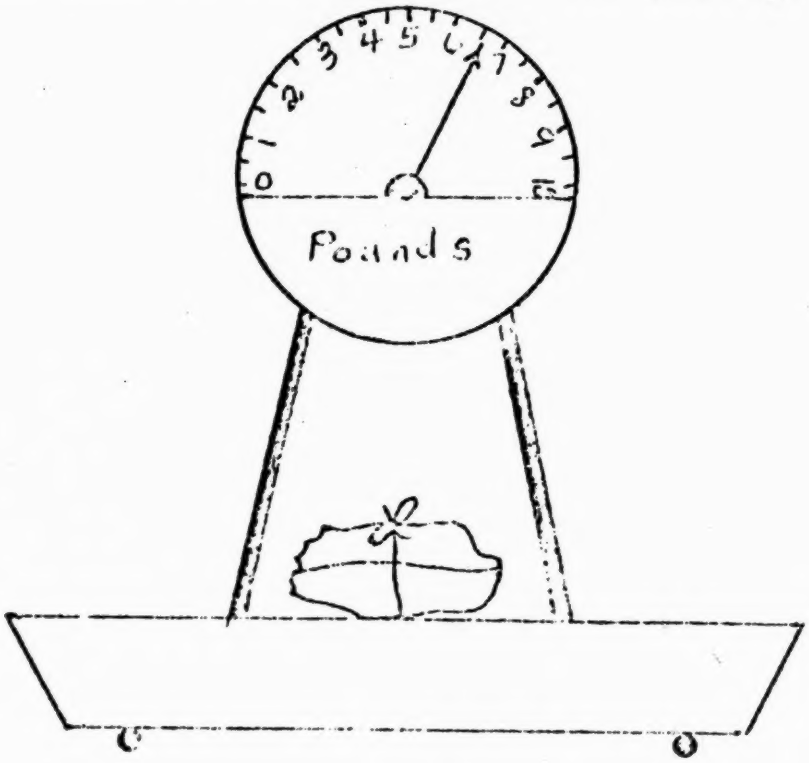
20. To the nearest pound what is the weight of the package on the scale?

a) 7 ½ lbs

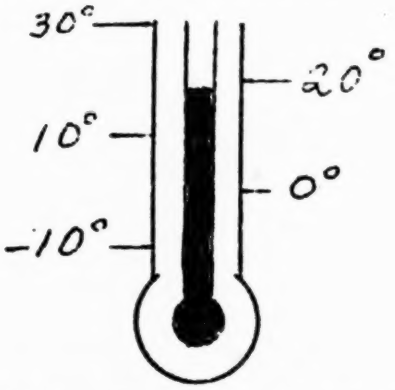
[✓ b)] 7 lbs.

c) 6 ½ lbs.

d) 6 lbs.



21. To the nearest 5 degrees, the thermometer shows what temperature?



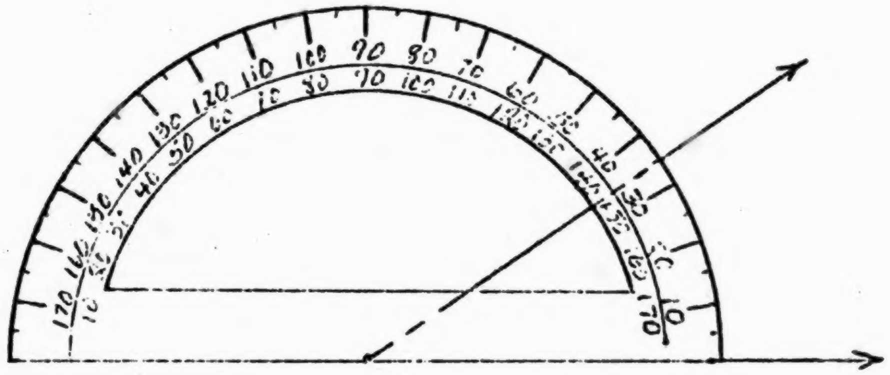
[✓ a)] 20°

b) 10°

c) 25°

d) 15°

22. The picture shows a protractor that is placed on an angle. How many degrees does the angle measure"



a) 45 [✓ b)] 35 c) 155 d) 145

23. 100 inches is equal to ____________________.

a) 6 feet

b) 3 yards

[✓ c)] 2 yards, 2 feet, 4 inches

d) 4 yards, 4 inches

24. 3 hours 40 minutes 30 seconds
+2 hours 20 minutes 40 seconds

a) 6 hr. 10 min. 20 sec.

[✓ b)] 6 hr. 1 min. 10 sec.

c) 5 hr. 61 min.

d) 6 hr. 10 min. 10 sec.

25. 2 gallons 3 quarts
x 5

a) 15 gallons

b) 17 gallons 1 quart

c) 11 gallons 5 quarts

[✓ d) 13 gallons 3 quarts]

GEOMETRY

Mr. Point! Poor Point! He has a place to be. But no size and shape. There's no point to see.

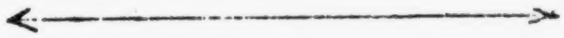
26. Which of the following sentences is true?

a) A point is a mark made by a pencil.
[✓ b) A point is a location.]
c) You can see a point.
d) A point is a very small mark.

27. Every Geometric figure is a set of

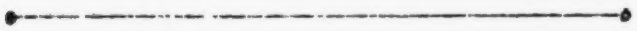
a) circles [✓ b) points] c) triangles

28. This is a drawing of a



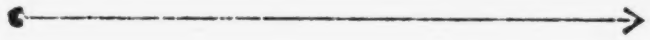
a) ray b) line segment [✓ c) line]

29. This is a drawing of a



a) point [✓ b) line segment] c) line

30. This is the correct way to draw a picture of a



a) line segment [✓ b) ray] c) line

31. The set of points contained in two rays with a common endpoint is

a) a circle b) a triangle [✓ c) an angle]

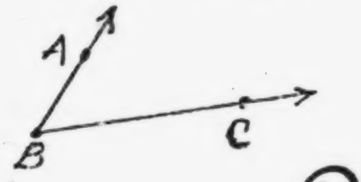
32. The common endpoint of the two rays forming an angle is the

a) center [✓ b) vertex] c) side

33. When angles have equal measure they are

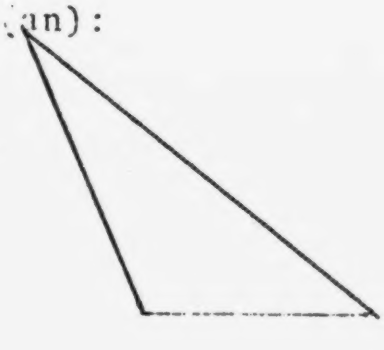
a) infinite b) parallel [✓ c) congruent]

34. In this drawing of an angle the vertex is at point



a) A [✓ b) B] c) C

35. The figure on the right is a (an):



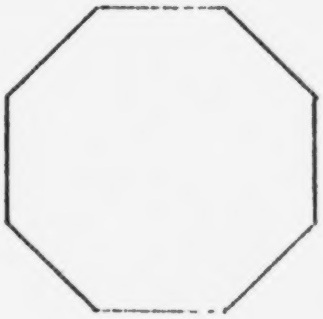
a) rhombus

[✓ b) triangle]

c) octagon

d) hexagon

36. The figure on the right is a (an) :



a) rhombus

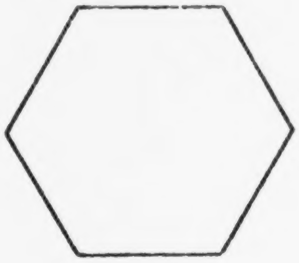
b) triangle

[✓ c) octagon]

d) hexagon

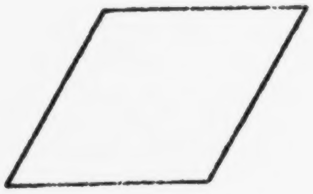
37. The figure on the right is a (an):

a) rhombus
b) triangle
c) octagon
[✓ d)] hexagon



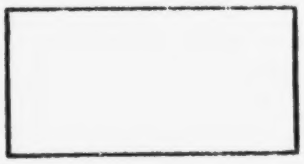
38. The figure on the right is a (an):

[✓ a)] rhombus
b) triangle
c) octagon
d) hexagon



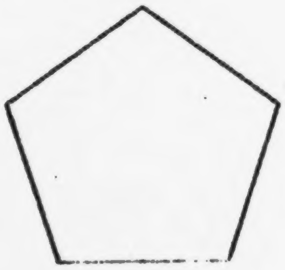
39. The figure on the right is a (an):

a) Octagon
[✓ b)] rectangle
c) hexagon
d) pentagon



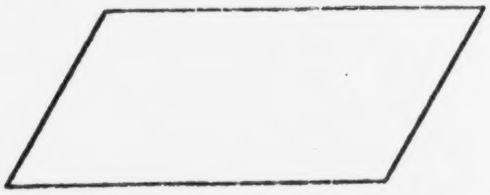
40. The figure on the right is a (an):

a) octagon
b) rectangle
c) hexagon
[✓ d)] pentagon



41. The figure on the right is a (an):

a) octagon
b) rectangle
c) hexagon
[✓ d)] parallelogram



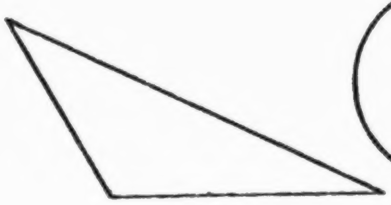
42. Which one of the four figures is a right triangle?

a) 1

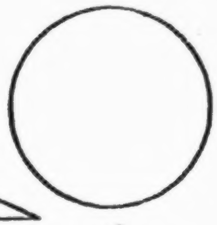
b) 2

[✓ c) 3]

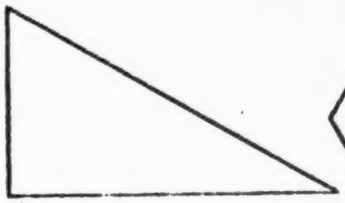
d) 4



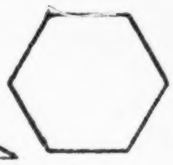
1



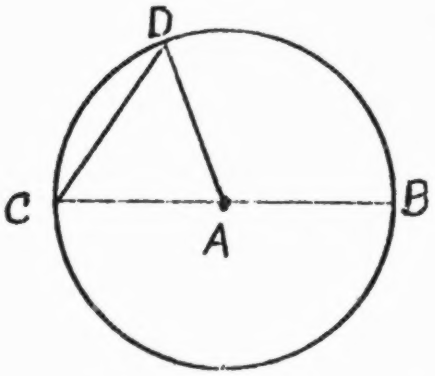
2



3



4



43. In the circle above point A is the _______________ .

a) chord b) radius [✓ c) center]

44. In the circle above $\overline{AD}$ is a _____________.

[✓ a) radius] b) diagonal c) diameter

45. In the circle above $\overline{BC}$ is _______________.

a) the center b) a radius [✓ c) a diameter]

46. In the circle above $\overline{CD}$ is a _____________.

[✓ a) chord] b) diameter c) radius

47. If you laid a piece of string along the circle above, the length of the string would measure the __________ of the circle.

a) area b) diameter [✓ c) circumference]

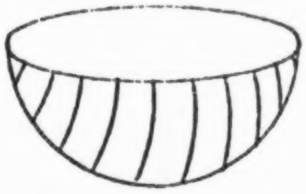
48. The figure on the right is a:

a) cylinder

b) cube

c) cone

[✓ d) hemisphere]



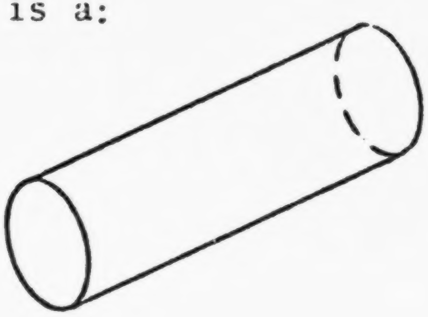
49. The figure at the right is a:

[✓ a)] cylinder

b) cube

c) cone

d) hemisphere



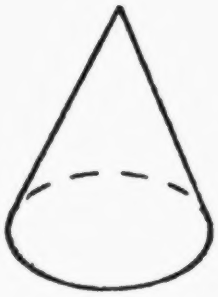
50. The figure on the right is a:

a) cylinder

b) cube

[✓ c)] cone

d) hemisphere



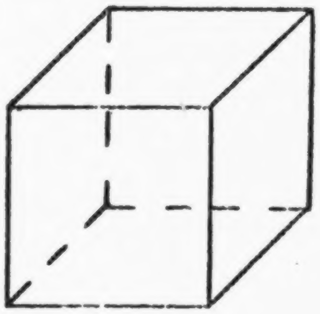
51. The figure on the right is a:

a) cylinder

[✓ b)] cube

c) cone

d) hemisphere



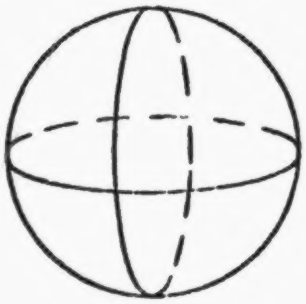
52. The figure on the right is a:

a) rectangular prism

b) triangular prism

[✓ c)] sphere

d) pyramid



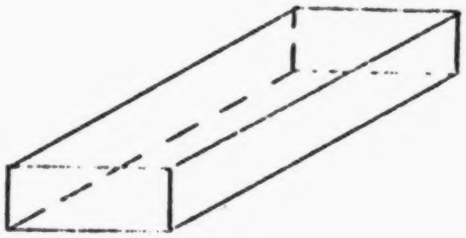
53. The figure on the right is a:

[✓ a)] rectangular prism

b) triangular prism

c) sphere

d) pyramid



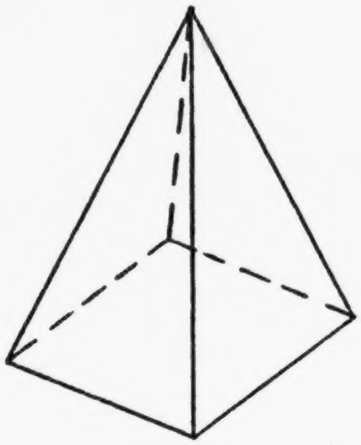
54. The figure on the right is a:

a) rectangular prism

b) triangular prism

c) sphere

[✓ d)] pyramid



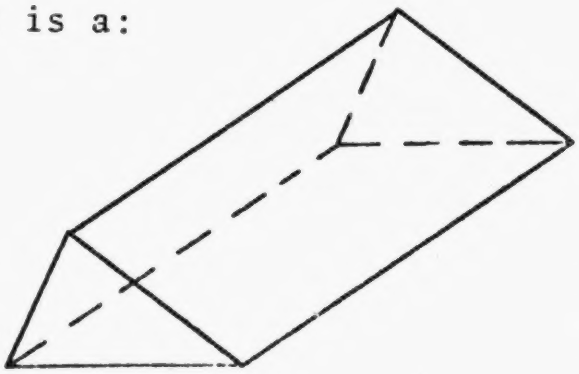
55. The figure on the right is a:

a) rectangular prism

[✓ b)] triangular prism

c) sphere

d) pyramid



56. Which of the following is an example of parallel line segments?

a) the corner of a room

b) two streets that meet at a stoplight

[✓ c)] The long edges of a 12 inch ruler

57. Which of the following is an example of line segments that intersect?

a) railroad tracks

b) two power line wires strung from one pole to the next

[✓ c)] the top edge and the side edge of a door

58. Two intersecting lines have ________ point(s) in common.

a) 0 [✓ b)] 1 c) 2 d) an infinite number of

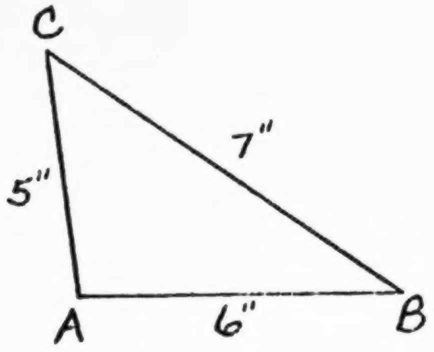
59. Which of the following is an example of perpendicular line segment

a) railroad tracks

[✓ b)] the letter "T"

c) line segments that form an acute angle

60.



The perimeter of △ ABC is equal to ______________.

[✓ a)] 5" + 6" + 7"   b) 5" x 6" x 7"   c) $\frac{1}{2}$" x 6" x 5"

61. The perimeter of any polygon can be found by ___________.

a) measuring the length of one side and multiplying by the number of sides

[✓ b)] measuring the length of each side and adding the lengths

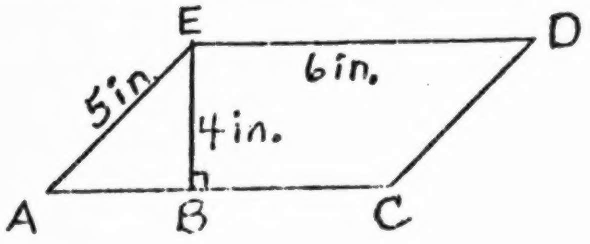
c) measuring the lengths of each side and finding the average

62. The area of ▱ ACDE is ________________.

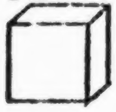
a) 30 square inches

[✓ b)] 24 square inches

c) 12 square inches



63. The volume of the following figure in unit cubes is ________.

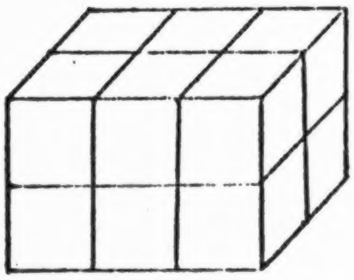
 = 1 unit cube.

a) 10

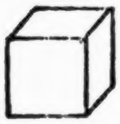
[✓ b)] 12

c) 8

d) 6



64. Find the volume of this box in unit cubes.

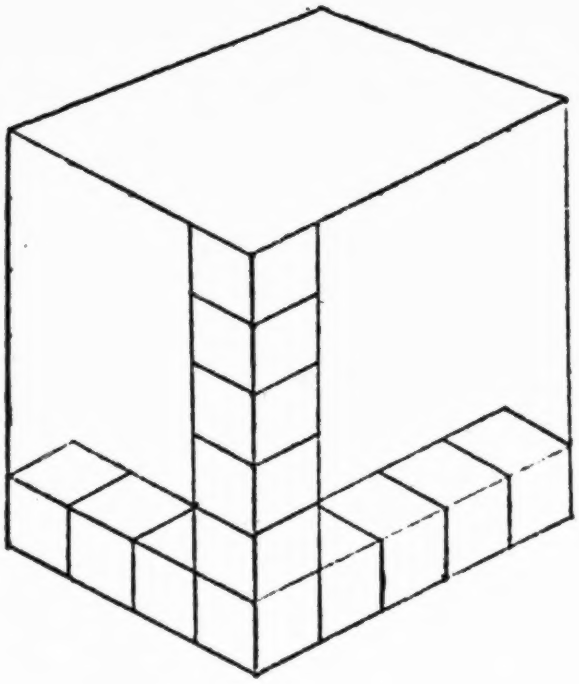
 = 1 unit cube

a) 64

b) 100

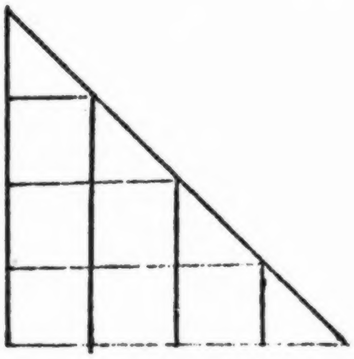
[✓ c)] 120

d) 144



65. The area of △ABC is ______________ square units.

☐ = 1 square unit

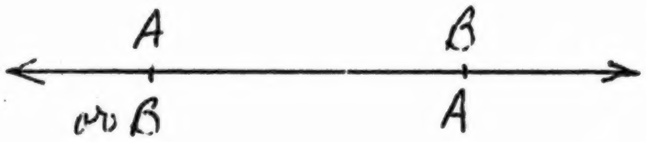


a) 6 [✓ b)] 8 c) 10 d) 12

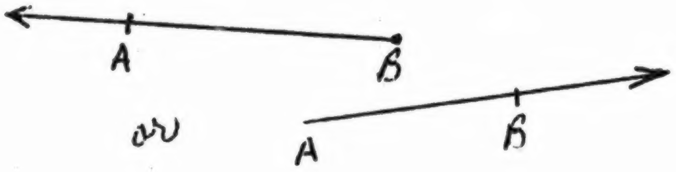
Part III

Directions: You are to make several geometric constructions on this and the next page. You should use only a straight edge, pencil, and in some cases, a compass. Do not erase the marks that you make on the paper as you do the constructing. These marks show whether or not you did the construction correctly. No construction marks are needed for items 1, 2, and 8.

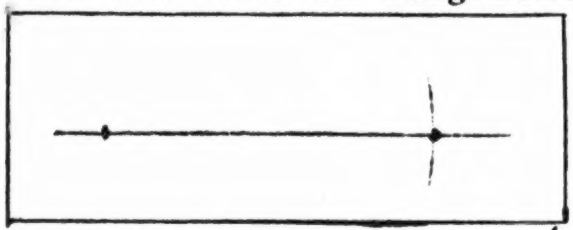
1. Construct a model of a line below and label it with two points A and B



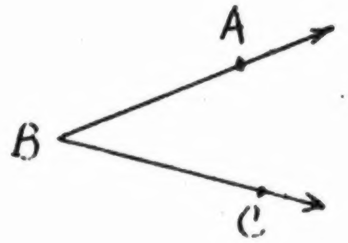
2. Construct a model of a ray below and label it with two points A and B.

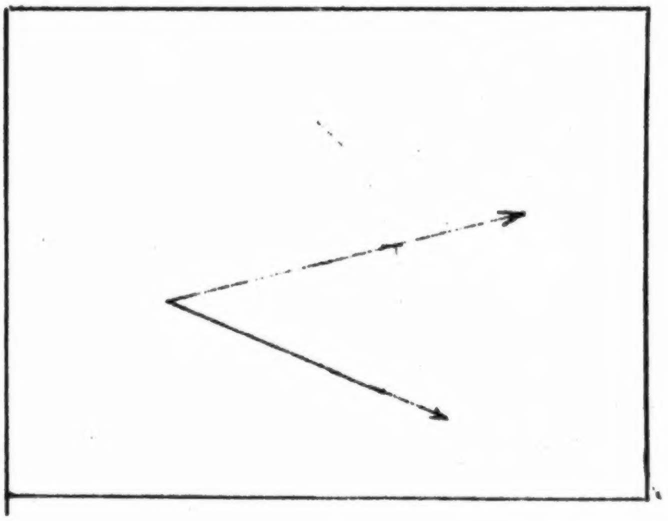


3. Construct a line segment in the box that is congruent to $\overline{AB}$.

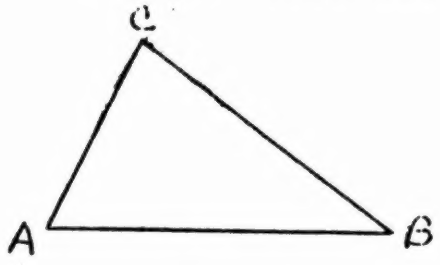


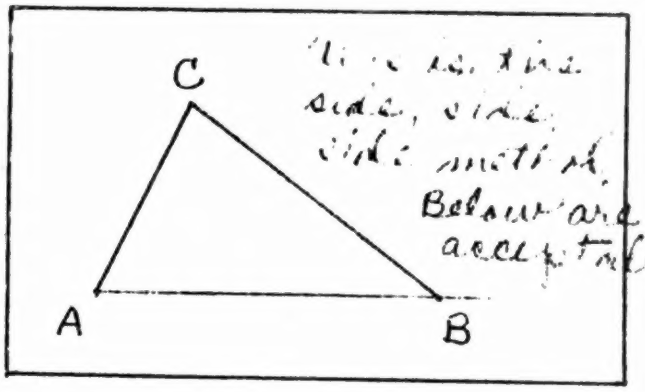
4. Construct an angle in the box that is congruent to $\angle$ABC.





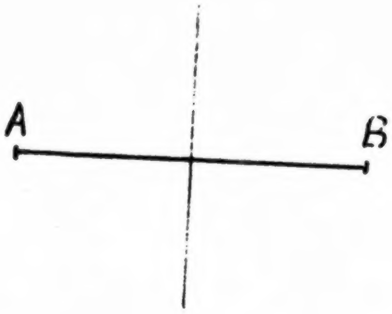
5. Construct a triangle in the box that is congruent to $\triangle ABC$ and then label the points A, B, and C on your triangle.



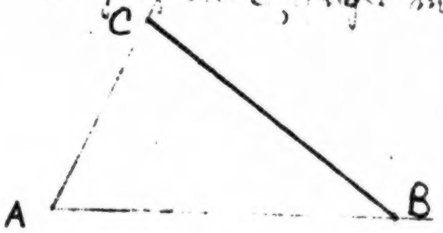


This is the side, side, side method.
Below are 2 other acceptable methods.

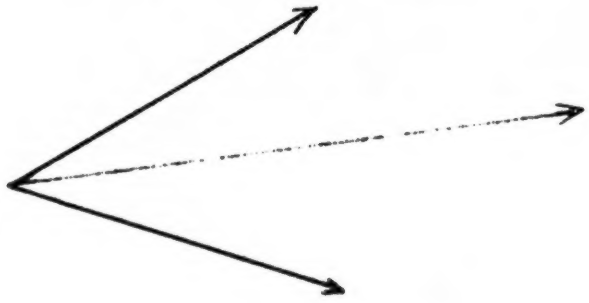
6. Bisect $\overline{AB}$ below.



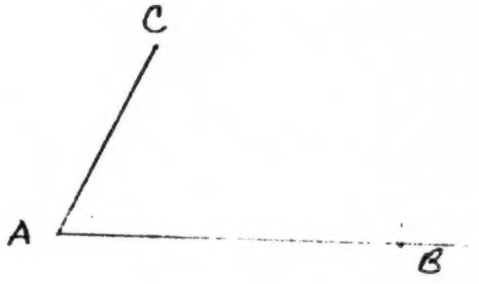
angle, side, angle method.



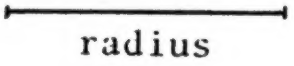
7. Bisect the angle below.



side, angle, side method.



8. Using only a compass, construct a circle that has its center at C and a radius congruent to the one shown.



Part IV

time limit: 5 minutes

ADDITION AND SUBTRACTION TEST

(1) 9	(2) 8	(3) 7	(4) 8	(5) 9	(6) 4
+2	+7	+6	+5	+4	+8
11	15	13	13	13	12

(7) 7	(8) 8	(9) 5	(10) 3	(11) 6	(12) 2
+4	+3	+7	+9	+8	+8
11	11	12	12	14	10

(13) 14	(14) 13	(15) 11	(16) 12	(17) 18	(18) 15
-9	-8	-6	-3	-9	-7
5	5	5	9	9	8

(19) 11	(20) 13	(21) 10	(22) 14	(23) 11	(24) 13
-8	-4	-7	-5	-2	-6
3	9	3	9	9	7

Time limit: 4 minutes

MULTIPLICATION TEST

(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
5	9	8	7	4	6	7	0
x 5	x 4	x 6	x 0	x 8	x 9	x 4	x 6
25	36	48	0	32	54	28	0

(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
2	6	7	5	3	2	3	7
x 4	x 6	x 7	x 9	x 7	x 2	x 9	x 2
8	36	49	45	21	4	27	14

(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)
4	6	3	2	5	9	7	6
x 3	x 8	x 2	x 8	x 4	x 2	x 6	x 5
12	48	6	16	20	18	42	30

(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)
8	7	3	5	7	8	8	4
x 7	x 5	x 3	x 2	x 1	x 2	x 3	x 6
56	35	9	10	7	16	24	24

(57)	(58)	(59)	(60)	(61)	(62)	(63)	(64)
9	5	8	6	4	3	1	9
x 9	x 7	x 8	x 3	x 4	x 5	x 4	x 6
81	35	64	18	16	15	4	54

Time limit: 4 minutes

DIVISION TEST

(65) $\begin{array}{r}3\\3\overline{)9}\end{array}$ (66) $\begin{array}{r}2\\6\overline{)12}\end{array}$ (67) $\begin{array}{r}7\\5\overline{)35}\end{array}$ (68) $\begin{array}{r}8\\8\overline{)64}\end{array}$

(69) $\begin{array}{r}8\\1\overline{)8}\end{array}$ (70) $\begin{array}{r}9\\5\overline{)45}\end{array}$ (71) $\begin{array}{r}9\\2\overline{)18}\end{array}$ (72) $\begin{array}{r}0\\7\overline{)0}\end{array}$

(73) $\begin{array}{r}6\\7\overline{)42}\end{array}$ (74) $\begin{array}{r}6\\4\overline{)24}\end{array}$ (75) $\begin{array}{r}5\\2\overline{)10}\end{array}$ (76) $\begin{array}{r}6\\9\overline{)54}\end{array}$

(77) $\begin{array}{r}4\\4\overline{)16}\end{array}$ (78) $\begin{array}{r}2\\2\overline{)4}\end{array}$ (79) $\begin{array}{r}3\\7\overline{)21}\end{array}$ (80) $\begin{array}{r}8\\9\overline{)72}\end{array}$

(81) $\begin{array}{r}4\\5\overline{)20}\end{array}$ (82) $\begin{array}{r}8\\3\overline{)24}\end{array}$ (83) $\begin{array}{r}3\\2\overline{)6}\end{array}$ (84) $\begin{array}{r}9\\9\overline{)81}\end{array}$

(85) $\begin{array}{r}6\\6\overline{)36}\end{array}$ (86) $\begin{array}{r}6\\3\overline{)18}\end{array}$ (87) $\begin{array}{r}3\\5\overline{)15}\end{array}$ (88) $\begin{array}{r}4\\9\overline{)36}\end{array}$

(89) $\begin{array}{r}7\\7\overline{)49}\end{array}$ (90) $\begin{array}{r}8\\4\overline{)32}\end{array}$ (91) $\begin{array}{r}4\\3\overline{)12}\end{array}$ (92) $\begin{array}{r}9\\7\overline{)63}\end{array}$

(93) $\begin{array}{r}5\\8\overline{)40}\end{array}$ (94) $\begin{array}{r}3\\9\overline{)27}\end{array}$ (95) $\begin{array}{r}7\\2\overline{)14}\end{array}$ (96) $\begin{array}{r}2\\8\overline{)16}\end{array}$

(97) $\begin{array}{r}5\\4\overline{)20}\end{array}$ (98) $\begin{array}{r}8\\6\overline{)48}\end{array}$ (99) $\begin{array}{r}4\\7\overline{)28}\end{array}$ (100) $\begin{array}{r}7\\8\overline{)56}\end{array}$

(101) $\begin{array}{r}5\\5\overline{)25}\end{array}$ (102) $\begin{array}{r}7\\3\overline{)21}\end{array}$ (103) $\begin{array}{r}2\\4\overline{)8}\end{array}$ (104) $\begin{array}{r}5\\6\overline{)30}\end{array}$

(Rev. 4-69)

MATHEMATICS CONCEPTS TEST

Basic Test: Level Six

Answer Key and Teachers' Guide

MATHEMATICS CONCEPTS TEST

Basic Test: Level Six
(Grade 6)

ANSWER KEY AND TEACHERS' GUIDE

Description of Test

Items for this mathematics test have been written to assess behavioral objectives proposed by the Mathematics Curriculum Guide, K-6. Multiple choice test items are used where possible. Other behavioral objectives are tested by requiring the student to construct geometric figures. Immediate recall of basic facts is tested by four timed tests. A cross reference of objectives from the Curriculum Guide and items in the test is included with the Teachers' Guide.

Multiple Choice Test Items

Parts I and II of the test consist of items which can be machine scored directly from the IBM 1230 answer sheet. Students mark answers on answer sheets. The test administrator should inform all students to mark each response carefully with a No. 2 black lead pencil. Answer sheets marked with ink or crayon cannot be machine scored. There should be no extra marks of any type on the answer sheet. Teachers may want to hand score certain answer sheets. In the process of hand scoring, no mark should be placed on the answer sheet until machine scoring has been completed.

Computer Analysis

Computer analysis of test results will develop the following information:

1. Number of items correct, missed, and unanswered for each student.
2. Percentage score for each student.
3. Frequency distribution of percentage scores.
4. Mean score.
5. Standard deviation.
6. Item analysis--biserial correlation.

Identification of Student Answer Sheets

Student name and other information on the upper left hand side of the answer sheet is used for a quick visual identification. However, the computer does not use this data. In the upper right hand section space is provided to code a student identification number. Data will be processed by the computer in accordance with this number. The recommended procedure for assigning student identification numbers is as follows:

1. Assign each student a different six (6) digit number. If desired the first digits may be zeros, i.e., 000001, 000002, etc. The test results will be recorded numerically by this student number.
2. Record the number vertically in the column of boxes, one digit to a box, starting at the top.
3. Darken in the corresponding digit in the rows to the right of the boxes, one digit to a box.
4. The teacher should keep a record of the number she has assigned to each student so that she can identify the student by that number when the tests are returned.
5. Three answer sheets are required for this test. Care should be taken that each student uses the same number for both answer sheets.
6. Use one answer sheet for Part I (102 items) and another answer sheet for Part II (61 items).
7. Responses to Part III are recorded on the second answer sheet. A third answer sheet must be prepared for Part IV.

Teacher Scored Subtests

Parts III and IV of the test consist of items which must be hand scored by the teacher. After scoring, responses are recorded on answer sheets by the teacher.

Part III consists of nine items. Record the responses for this subtest on the second answer sheet. Mark "a" for a correct response and "b" for an incorrect response. For unanswered questions, place no mark on the answer sheet. Mark answers beginning with row 73 in Section B. *Note, Part II consists of 61 items. Therefore, rows 62-72 in Section A of the answer sheet are left blank.

Part IV consists of 104 items. After hand scoring, record the responses on a third answer sheet. Mark "a" for correct, "b" for incorrect and leave blank for unanswered questions.

Time Limits for Tests

This test is designed to be a mastery test. Consequently time limits have been established which will permit over ninety percent of the students to attempt every item on the test. Students should be told that there is no penalty for guessing. It is better to attempt a difficult item than to pass it over

Administration in four sittings is recommended.

First Sitting	Part I, questions 1-50	50 minutes
Second Sitting	Part I, questions 51-102	50 minutes
Third Sitting	Part II	50 minutes
Fourth Sitting	Part III	20 minutes
Fourth Sitting	Part IV	11 minutes

Although Part I may be administered in two sittings, completion should be accomplished during the same day. This will preclude students checking on difficult items and perhaps changing their answers on the answer sheet.

Directions to Students

The student is expected to read the test and make a response either on the answer sheet or in the test booklet. No marks should be made in the test booklets for Parts I and II. For Parts III and IV the answer is written in the booklet. Unknown mathematical terms or processes should not be explained to students before or during the test.

Supplies Needed for Testing

1. For Parts I and II each student should have two No. 2 pencils, scratch paper, and test and one answer sheet.
2. For Part III students will need a compass and a straight edge, pencils, and one test.
3. For Part IV students will need pencils and copies of the tests.

Norms

District norms will be made available so that student achievement in different schools can be compared. Teachers should be more concerned with the item analysis and cross reference of objectives and test items. A study of test results for any class will provide insights concerning areas where more instruction is needed both for individuals and groups of students.

GRADE SIX

A CROSS REFERENCE OF OBJECTIVES FROM THE CLARK COUNTY CURRICULUM GUIDE AND ITEMS IN THE MATHEMATICS COVERAGE TEST

CODE: "N" means number strand; "Nu" means numeration strand; "O" means operations strand; "G" means geometry strand; and, "M" means measurement strand.

An example: M-4 means objective #4 in the measurement strand.

OBJECTIVE #	ITEM #
N-1	1
N-2	2
N-3	3
N-4	4
N-6	5
N-5	6
N-7	7
N-8	8
N-9	9
N-10	10
N-11	11
N-12	12
N-13	13
N-14	14
Nu-1	15
Nu-2	16
Nu-4	16
Nu-3	17
Nu-5	18,19
Nu-6	20
Nu-7	21
Nu-34	21
Nu-8	7
Nu-9	22
Nu-10	23
Nu-11	24
Nu-12	25
Nu-13	26
Nu-14	27
Nu-34	27
Nu-15	28

OBJECTIVE #	ITEM #
Nu-16	29
Nu-17	30
Nu-18	31
Nu-19	32
Nu-20	33
Nu-21	34
Nu-22	35
Nu-23	36
Nu-24	37
Nu-25	38
Nu-26	39
Nu-27	40
Nu-28	41
Nu-29	42
Nu-30	43
Nu-31	44
Nu-32	NC
Nu-33	45
Nu-35	46
Nu-36	47
Nu-37	48

OBJECTIVE #	ITEM #
0-1&7	49
0-1&7	50
0-2	51
0-4	52
0-5	53
0-6	54,55
0-7	56,57
0-8	58,59
0-9	60
0-11	61
0-12	62
0-13	63
0-14	64
0-15	65
0-16	66
0-17	67
0-18	68
0-19	NC
0-20	69
0-21	70
0-22	71
0-23	72
0-24	73
0-25	74,75
0-26	76
0-27	77,78
0-28	NC
0-29	NC
0-30	79
0-31	80
0-32	81,82
0-33	83
0-34	84
0-35	NC
0-36	85
0-37	NC
0-38	NC
0-39	86
0-40	87
0-41	88
0-42	89

OBJECTIVE #	ITEM #
0-43	90
0-45	91
0-44	92
0-46	93
0-47	94
0-48	95
0-49	96,97
0-50	98-100
0-51	101
0-52	101
0-53	102

0-3 & 0-10 are the basic facts.

NC means not covered

PART II

OBJECTIVE #	ITEM #
G-1	1
G-2	2,3
G-3	2,3
G-2	4-7
G-3	4-6
G-2	8-15
G-6	16-20
G-4	21
G-5	22
G-8	23-25
G-9	26
G-10	NC
G-13	NC
G-15	27
G-3	28-32
G-16	33
G-17	NC
G-18	33
G-19	34
G-11	35
G-14	36
G-7	37-41
G-12	47
M-1	42
M-2	NC
M-3	43
M-4	44
M-1	45
M-5	46
M-8	47
M-10	48
M-7	49
M-12	36
M-13	NC
M-14	NC
M-15	50
M-9	51
M-6	52
M-18	NC
M-20	53
M-16	54
M-11	55
M-21	56-58
M-19	59
M-20	60
M-17	61

PART III

G-20	1-3
G-21	4
G-22	5
G-23	6
G-24	7
G-25	8
G-26	9

ST NAME (PLEASE PRINT) FIRST MIDDLE INITIAL
Johnson Larry J

GNATURE
Ms. R. Roberts

INSTRUCTOR COURSE NO SECTION NO
Laura Dearing 215

HOOL NAME SCHOOL NO
Math 1-16-69

NAME OF TEST DATE
Level 6 Part 1

INSTRUCTIONS Please Read Carefully

1. Erase completely any answer you change.
2. Do not write in margins.
3. Use No. 2 pencil and fill box.
4. Make marks heavy and black
5. For (T) True and (F) False questions use (1) for true and (2) for false

STUDENT IDENTIFICATION NUMBER

WRITE STUDENT NO. HERE ▼ | **BLACKEN APPROPRIATE DIGIT HERE**

0	▬ 1 2 3 4 5 6 7 8 9
2	0 1 ▬ 3 4 5 6 7 8 9
2	0 1 ▬ 3 4 5 6 7 8 9
3	0 1 2 ▬ 4 5 6 7 8 9
1	0 ▬ 2 3 4 5 6 7 8 9
5	0 1 2 3 4 ▬ 6 7 8 9

SECTION A

Sample

1 a b c d e
2 a b c d e
3 a b c d e
4 a b c d e
5 a b c d e
6 a b c d e
7 a b c d e
8 a b c d e
9 a b c d e
10 a b c d e
11 a b c d e
12 a b c d e
13 a b c d e
14 a b c d e
15 a b c d e
16 a b c d e
17 a b c d e
18 a b c d e
19 a b c d e
20 a b c d e
21 a b c d e
22 a b c d e
23 a b c d e
24 a b c d e
25 a b c d e
26 a b c d e
27 a b c d e
28 a b c d e
29 a b c d e
30 a b c d e
31 a b c d e
32 a b c d e
33 a b c d e
34 a b c d e
35 a b c d e
36 a b c d e
37 a b c d e
38 a b c d e
39 a b c d e
40 a b c d e
41 a b c d e
42 a b c d e
43 a b c d e
44 a b c d e
45 a b c d e
46 a b c d e
47 a b c d e
48 a b c d e
49 a b c d e
50 a b c d e
51 a b c d e
52 a b c d e
53 a b c d e
54 a b c d e
55 a b c d e
56 a b c d e
57 a b c d e
58 a b c d e
59 a b c d e
60 a b c d e
61 a b c d e
62 a b c d e
63 a b c d e
64 a b c d e
65 a b c d e
66 a b c d e
67 a b c d e
68 a b c d e
69 a b c d e
70 a b c d e
71 a b c d e
72 a b c d e

SECTION B

73 a b c d e f g h i j
74 a b c d e f g h i j
75 a b c d e f g h i j
76 a b c d e f g h i j
77 a b c d e f g h i j
78 a b c d e f g h i j
79 a b c d e f g h i j
80 a b c d e f g h i j
81 a b c d e f g h i j
82 a b c d e f g h i j
83 a b c d e f g h i j
84 a b c d e f g h i j
85 a b c d e f g h i j
86 a b c d e f g h i j
87 a b c d e f g h i j
88 a b c d e f g h i j
89 a b c d e f g h i j
90 a b c d e f g h i j
91 a b c d e f g h i j
92 a b c d e f g h i j
93 a b c d e f g h i j
94 a b c d e f g h i j
95 a b c d e f g h i j
96 a b c d e f g h i j
97 a b c d e f g h i j
98 a b c d e f g h i j
99 a b c d e f g h i j
100 a b c d e f g h i j
101 a b c d e f g h i j
102 a b c d e f g h i j
103 a b c d e f g h i j
104 a b c d e f g h i j
105 a b c d e f g h i j

CLARK COUNTY SCHOOL DISTRICT
LAS VEGAS, NEVADA

MATHEMATICS CONCEPTS TESTS

Basic Test: Level Six

Answer Key

MATHEMATICS CONCEPTS TEST

Basic Test: Level Six

1. Which of the following sets is infinite?

   a) The set of all fords

   [✓ b)] the set of all counting numbers

   c) the set of all 6th grade boys

   d) the set of all two-headed dogs

2. The cardinal number of this set is:

   {□, ○, ⬡, 8, A, △ ▭}

   a) 5 b) 10 [✓ c)] 7 d) 6

3. Which pair of numerals come before and after 16,710?

   [✓ a)] 16,709, ____________, 16,711

   b) 16,700, ____________, 16,702

   c) 16,712, ____________, 16,714

   d) 16,700, ____________, 16,720

4. R = {12, 9, 8, 7, 25, 2, 16, 15}

   The subset of odd numbers in set R is

   a) {12, 8, 2, 16}

   [✓ b)] {9, 7, 25, 15}

   c) {12, 9, 8, 16, 15}

   d) {9, 8, 7, 25, 2}

5. Which number is a prime number?

   a) 26 b) 39 [✓ c)] 47 d) 49

6. Having a million dollars in one bank is the same as having

[✓ a)] a thousand dollars in each of a thousand banks.

b) a hundred dollars in each of a thousand banks.

c) a thousand dollars in each of a hundred banks.

d) a hundred dollars in each of a hundred banks.

7. Which of the following is a prime factorization of 36?

a) 1 x 36 [✓ b)] 2 x 2 x 3 x 3 c) 4 x 9 d) 2 x 2 x 2 x 3

8. Which set of numerals is arranged from greatest to least?

a) $\{0, 5, 65, 900, 1000\}$

b) $\{1600, 1400, 900, 1010, 867\}$

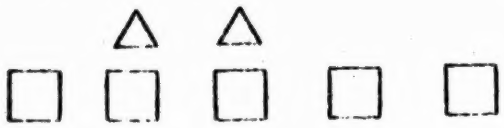
[✓ c)] $\{2200, 2165, 2075, 1967, 1821\}$

d) $\{5, 10, 20, 70, 90\}$

9. Which sign makes the statement true? $20 \div 5 \bigcirc 25 \div 5$

[✓ a)] $<$ b) $>$ c) $=$ d) $\div$

10. What is the ratio of triangles to squares?



a) two to one and one half

b) 6:2

c) 5/2

[✓ d)] 2/5

11. The rational number $\frac{25}{4}$ can be renamed as:

a) 6.25

b) 4:25

c) $6\frac{1}{4}$

[✓ d)] both A and C are correct

12. The set of rational numbers that is arranged in order from greatest to least is:

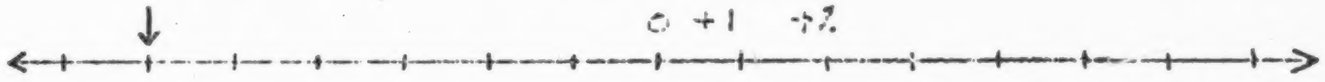
a) $\{.33, \frac{1}{2}, \frac{3}{4}, .56, \frac{7}{4}, \frac{1}{8}\}$

b) $\{\frac{1}{8}, \frac{1}{2}, .33, .56, \frac{3}{4}, \frac{7}{4}\}$

[✓ c)] $\{\frac{7}{4}, \frac{3}{4}, .56, \frac{1}{2}, .33, \frac{1}{8}\}$

d) $\{.56, .33, \frac{7}{4}, \frac{3}{4}, \frac{1}{2}, \frac{1}{8}\}$

13. The arrow is pointing to which number on the number line?



a) +2 b) +6 c) -3 [✓ d)] -6

14. π (pi) is

a) exactly equal to $\frac{22}{7}$

[✓ b)] approximately equal to $\frac{22}{7}$

c) exactly equal to 3.14

d) is a whole number

15. Which of the following is not a name for 8?

a) $\frac{32}{4}$ [✓ b)] 4^2 c) $\frac{8}{1}$ d) 8.00

16. One hundred one million, twenty-nine thousand, seven hundred three is:

[✓ a)] 101,029,703

b) 101,729,073

c) 101,029,073

d) 101,290,703

17. 736,895,990,042,108 could be written as:

a) seven hundred thirty-six million, eight hundred ninty-five trillion, nine hundred ninty million, forty-two thousand, one hundred eight

b) seven hundred billion, thirty-six million, eight hundred ninty-five thousand, nine hundred ninty-one hundred eight.

[✓ c)] seven hundred thirty-six trillion, eight hundred ninty-five billion, nine hundred ninty million, forty-two thousand, one hundred eight.

d) seven hundred thirty-six trillion, eight hundred ninty-five million, nine hundred ninty thousand, forty-two hundred, one hundred eight.

18. In the numeral 7 8 5 , 9 3 2 , 7 6 4 , 8 9 1 , 3 0 4.
Period 5 Period 4 Period 3 Period 2 Period 1

Period 4 tells the number of:

a) trillions b) millions [✓ c)] billions d) hundreds

19. In the numeral 785,932,764,891,304, which digit is in one billions' place?

a) 7 b) 1 [✓ c)] 2 d) 5

20. The numeral 473,245 written in expanded notation is:

a) (4x100,000) + (7x10,000) + (3x100,000) + (2x100) + (4 x 10) + (5 x 1)

[✓ b)] (4x100,000)+(7x10,000)+(3x1000)+(2x100)+(4x10)+(5x1)

c) (4x100,000)+(70x1000)+(300x100)+(2x100)+(4x10)+(5x1)

d) (4x10,000)+(7x1,000)+(3x1,000)+(2x10)+(4x1)+(5)

21. The expanded numeral for 81,437 written in exponential notation is:

[✓ a)] $(8 \times 10^4)+(1 \times 10^3)+(4 \times 10^2)+(3 \times 10^1)+(7 \times 10^0)$

b) $(8 \times 10^3)+(1 \times 10^2)+(4 \times 10^1)+(3 \times 10^0)+(7)$

c) $(8 \times 10^5)+(1 \times 10^4)+(4 \times 10^3)+(3 \times 10^2)+(7 \times 10^1)$

d) $(80 \times 10^3)+(10 \times 10^2)+(400)+(30)+(7)$

22. The numeral 965 written as a Roman numeral is:

a) MCLV [✓ b)] CMLXV c) CMLV d) CMXLV

23. The Roman numeral MCCXLV is written in Arabic numerals as:

a) 12,450 b) 1,425 [✓ c)] 1,245 d) 10,245

24. Given a Roman numeral XXX and a base ten numeral 333, which is true?

[✓ a)] XXX = 10 + 10 + 10

b) 333 = 3 + 3 + 3

c) Each "X" has a different value depending on its place in the numeral.

d) The two numerals name the same number.

25. The Roman numeral CDLX means:

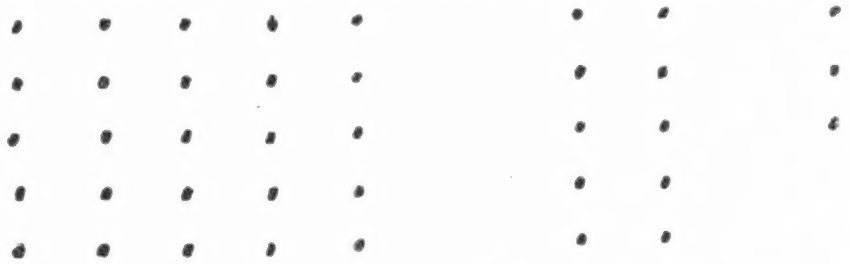
a) (500 + 100) - (50 + 10)

b) (500 - 100) + (50 - 10)

c) (500 + 100) + (50 - 10)

[✓ d)] (500 - 100) + (50 + 10)

26. The base five numeral for the following set of dots is:



a) 38_{five} b) 321_{five} [✓ c)] 123_{five} d) 523_{five}

27. Which of the following does not mean the same as 10110_{two}?

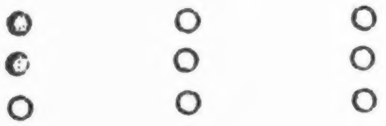
[✓ a)] (1 x 22) + (0 x 8) + (1 x 4) + (0 x 2) + (1 x 1)

b) (1 x 16) + (0 x 8) + (1 x 4) + (1 x 2) + (0 x 1)

c) $(1 \times 2^4) + (0 \times 2^3) + (1 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$

d) 22_{ten}

28. The subset of shaded dots in this set can be represented by what rational number?



[✓ a)] $\frac{2}{9}$ b) $\frac{1}{3}$ c) $\frac{7}{9}$ d) $\frac{2}{3}$

29. In the fraction $\frac{7}{3}$ the 7 is:

a) the divisor

b) the denominator

[✓ c)] the numerator

d) the addend

30. Given the fraction $\frac{7}{8}$, two equivalent fractions are:

a) $\frac{8}{9}$, $\frac{9}{10}$ [✓ b)] $\frac{14}{16}$, $\frac{21}{24}$ c) $\frac{2}{3}$, $\frac{5}{6}$ d) $\frac{14}{16}$, $\frac{20}{24}$

31. The fraction $\frac{12}{32}$ renamed to its simplest form is:

a) $\frac{4}{8}$ b) $\frac{3}{7}$ c) $\frac{6}{16}$ [✓ d)] $\frac{3}{8}$

32. Find the missing numerator of $\frac{4}{9} = \frac{\quad}{27} = \frac{20}{45}$

a) 36 b) 8 [✓ c)] 12 d) 16

33. Which set of the following fractions are all equivalent?

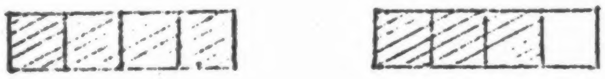
[✓ a)] $\left\{\frac{6}{8}, \frac{18}{24}, \frac{3}{4}\right\}$

b) $\left\{\frac{3}{4}, \frac{6}{8}, \frac{12}{24}\right\}$

c) $\left\{\frac{1}{2}, \frac{2}{4}, \frac{3}{5}\right\}$

d) $\left\{\frac{1}{2}, \frac{2}{3}, \frac{3}{4}\right\}$

34. Which numeral does not represent the shaded portion of this model?



a) $\frac{7}{4}$ b) one and three-fourths [✓ c)] $\frac{1}{4}$ d) $1\frac{3}{4}$

35. The improper fraction $\frac{25}{7}$ renamed as a mixed numeral is:

a) 3.99 b) $4\frac{3}{7}$ c) $3\frac{6}{7}$ [✓ d)] $3\frac{4}{7}$

36. The mixed number $7\frac{14}{100}$ changed into a decimal numeral is:

a) 7.014 [✓ b)] 7.14 c) 7.104 d) .714

37. The numeral 23.74 written in expanded notation is:

a) 20 + 3 + 70 + 4

[✓ b)] $(2 \times 10) + (3 \times 1) + (7 \times \frac{1}{10}) + (4 \times \frac{1}{100})$

c) $(2 \times 1) + (3 \times \frac{1}{10}) + (7 \times \frac{1}{100}) + (4 \times \frac{1}{1000})$

d) $(2 \times 3) + (7 \times 4)$

38. Another name for two thousand, four hundred seventy-nine and six thousand, three hundred five ten thousandths is:

[✓ a)] 2,479 305

b) 2,479,630.5

c) 24,796,305

d) 24,796.305

39. The numeral .1785 can be written in expanded notation as:

a) $(1 \times 100^{4}) + (7 \times 10^{3}) + (8 \times 10^{2}) + (5 \times 10')$

b) $(1 \times 1000) + (7 \times 100) + (8 \times 10) + (5 \times 1)$

c) $1000 + 700 + 80 + 5$

[✓ d)] $\frac{1}{10} + \frac{7}{100} + \frac{8}{1000} + \frac{5}{10{,}000}$

40. Which of the following names is a repeating decimal fraction?

a) .50 b) .75 c) .33 [✓ d)] .33...

41. Which common fraction is a repeating decimal fraction?

a) $\frac{1}{2}$ b) $\frac{1}{4}$ [✓ c)] $\frac{2}{3}$ d) $\frac{3}{5}$

42. Which of the following is not another name for 47%?

a) .47 [✓ b)] .047 c) forty-seven percent d) $\frac{47}{100}$

43. Which answer lists the correct order of the types of numerals in the following set?

$\left\{\frac{3}{4}, .64, 3\frac{2}{3}, 26\%\right\}$

[✓ a)] common fraction, decimal fraction, mixed numeral,per cent

b) decimal fraction, mixed numeral, common fraction, percent

c) mixed numeral, decimal fraction, common fraction, percent

d) percent, decimal fraction, common fraction, mixed numeral

44. Another name for "the opposite of 8" is:

[✓ a)] negative eight

b) positive eight

c) eight percent

d) eight in base nine

45. The numeral 3,628.767 rounded to the nearest hundredth is:

a) 3,600.00 b) 3,628.76 c) 3,628.8 [✓ d)] 3,628.77

46. Another name for 3^5 is:

a) 5 x 5 x 5

[✓ b)] 3 x 3 x 3 x 3 x 3

c) 3 + 3 + 3 + 3 + 3

d) 5^3

47. Which of the following statements is incorrect?

[✓ a)] $2^3 = 2 \times 3$

b) $3^2 = 3 \times 3$

c) $5^3 = 125$

d) $2^3 = 8$

48. Written in scientific notation 93,000,000 is:

[✓ a)] 9.3×10^7

b) 93 x 1,000,000

c) 9.3×10^8

d) 9.3×10^6

49. If $\square + 46,934 = 6,000,001$, then $\square =$

a) 6,053,967 [✓ b)] 5,953,067 c) 6,043,935 d) 4,959,067

50. If $\square - 2456 = 3798$, then $\square =$

a) 1342 [✓ b)] 6254 c) 5144 d) 5254

51. $\begin{array}{r}8076\\ -1384\\ \hline\end{array}$ Which of the problems below is a check of the answer to this problem?

a) $\begin{array}{r}1384\\ -6692\\ \hline\end{array}$ b) $\begin{array}{r}8076\\ \times 6692\\ \hline\end{array}$ c) $\begin{array}{r}8076\\ +6692\\ \hline\end{array}$ [✓ d)] $\begin{array}{r}1384\\ +6692\\ \hline\end{array}$

52. Which arrangement seems easiest for adding these numbers?

a) $(17 + 9) + (3 + 1)$

[✓ b)] $(17 + 3) + (9 + 1)$

c) $(3 + 9) + (17 + 1)$

d) $(1 + 3) + (9 + 17)$

53. To make this statement true, $6428 + \square = 6428 - \square$, $\square$ can be

a) any number b) 1 only c) 6428 only [✓ d)] zero only

54. $\begin{array}{r}638,245,079\\ +\ 25,346,942\\ \hline\end{array}$

[✓ a)] 663,592,021

b) 612,898,137

c) 653,581,911

d) 653,592,121

55. $\begin{array}{r}900,389,400\\ -\ \ 9,230,099\\ \hline\end{array}$

a) 909,619,499

b) 901,159,301

[✓ c)] 891,159,301

d) 801,159,311

56. 56 ○ 8 = 64 What symbol placed in the circle would make this statement true?

[✓ a)] + b) − c) x d) ÷

57. 1832 ○ 1802 = 30 What symbol placed in the circle would make this statement true?

a) + [✓ b)] − c) x d) ÷

58. □ x 64 = 25,088 What operation would you use to correctly solve this problem?

a) + b) − c) x [✓ d)] ÷

59. Which equation has the same solution as 240 ÷ 48 =

a) 240 - 48 = □

b) 240 + 48 = □

[✓ c)] 48 x □ = 240

d) 48 ÷ 240 = □

60. Which of the items below should be used to check the answer to this problem?

675 r 13
14)9463

a)	b)	c)	[✓ d)]
9463 x 14 37852 9463 132482	675 x13 2025 675 8775 + 14 8789	675 x14 2700 675 9463	675 x14 2700 675 9450 + 13 9463

61. Which arrangement seems easiest for multiplying these numbers?

a) (4 x 359) x 25

[✓ b)] (4 x 25) x 359

c) (359 x 4) x 25

d) (359 x 25) x 4

62. $\begin{array}{r} 218 \\ \times 306 \\ \hline 1308 \\ 65400 \\ \hline 66708 \end{array}$ Which of the items below could be used to check the answer to this problem?

[✓ a)] $\begin{array}{r} 306 \\ \times 218 \\ \hline \end{array}$ b) $\begin{array}{r} 306 \\ -218 \\ \hline \end{array}$ c) $\begin{array}{r} 65{,}400 \\ + \quad 306 \\ \hline \end{array}$ d) $\begin{array}{r} 66{,}708 \\ -64{,}400 \\ \hline \end{array}$

63. To make this statement true, 1523 ÷ ☐ = 1523 x ☐

☐ can be

a) any number

[✓ b)] 1 only

c) 1523 only

d) zero only

64. If 7320 x 0 = ☐ , then ☐ =

a) 7320 b) 73,200 [✓ c)] 0 d) 10

65. Which problem cannot be solved?

a) 0 ÷ 4 =

b) 4 ÷ 4 =

[✓ c)] 4 ÷ 0 =

d) 1 ÷ 1 =

66. 53 x 624 =

a) (5 x 624) + (3 x 624)

b) (5 x 624) + (30 x 624)

[✓ c)] (50 x 624) + (3 x 624)

d) (53 x 60) + (53 x 24)

67.

$$\begin{array}{r} 9073 \\ \times\ 286 \\ \hline \end{array}$$

[✓ a)] 2,594,878   b) 9,359   c) 2,579,268   d) 145,168

68. $45\overline{)4374}$

a) 98 r1   b) 817 r9   c) 9 r324   [✓ d)] 97 r9

69. What symbol placed in the ○ makes this statement true?

1212 ○ 4 = 303

a) +   b) −   c) ×   [✓ d)] ÷

70. Find the average of these numbers: 56, 61, 57, 58

a) 290   [✓ b)] 58   c) 29   d) 57

71. Which number names the greatest common factor of this set of numbers? {3, 12, 18, 24}

a) 6   [✓ b)] 3   c) 72   d) 24

72. Which number names the least common multiple of this set of numbers? {6, 12, 24}

a) 12   b) 8   c) 48   [✓ d)] 24

73. In this equation the "3" is:

$5^3 = 125$

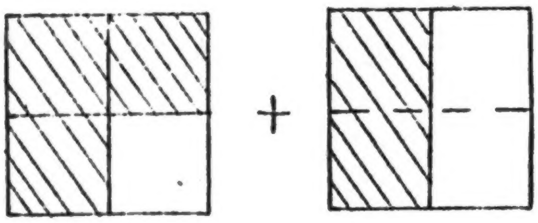
a) the base

[✓ b)] the exponent

c) a factor

d) the product

74. This model shows:



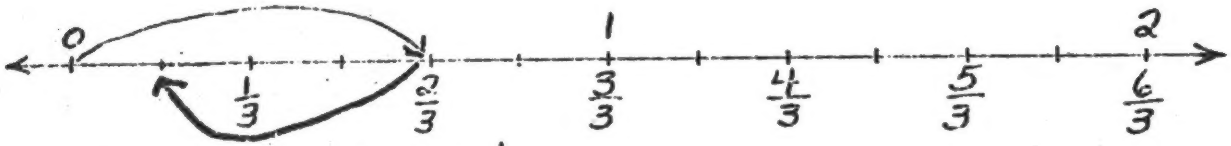
a) $\frac{3}{4}+\frac{1}{4}=1$

b) $\frac{3}{4}+1=2$

c) $\frac{3}{4}+\frac{2}{4}=\frac{5}{8}$

[✓ d)] $\frac{3}{4}+\frac{1}{2}=\frac{5}{4}$

75. This number line model shows which equation?



a) $2\frac{2}{3}+\frac{1}{2}=3\frac{1}{6}$

b) $\frac{5}{6}+\frac{2}{3}=2$

[✓ c)] $\frac{2}{3}-\frac{3}{6}=\frac{1}{6}$

d) $\frac{2}{3}+\frac{1}{6}=\frac{5}{6}$

76. Which equation has the same solution as $2\frac{2}{3}-\square=\frac{5}{6}$

a) $\begin{array}{r} 2\frac{2}{3} \\ +\frac{5}{6} \\ \hline \square \end{array}$

[✓ b)] $\begin{array}{r} \frac{5}{6} \\ +\square \\ \hline 2\frac{2}{3} \end{array}$

c) $\begin{array}{r} \square \\ -2\frac{2}{3} \\ \hline \frac{5}{6} \end{array}$

d) $\begin{array}{r} \square \\ -\frac{5}{6} \\ \hline 2\frac{2}{3} \end{array}$

77. $\frac{2}{3}+\square=\square+\frac{2}{3}$ is true for $\square$ is equal to:

[✓ a)] any number

b) 1 only

c) 0 only

d) never true

78. $\left(\frac{1}{3} + [\,]\right) + \frac{1}{4} = \frac{1}{3} + \left([\,] + \frac{1}{4}\right)$ is true for [ ] is equal to

[✓ a)] any number

b) 1 only

c) 0 only

d) never true

79. $\frac{2}{3} + \frac{8}{9} =$ Which names the answer in the lowest terms?

a) $1\frac{2}{3}$ [✓ b)] $1\frac{5}{9}$ c) $\frac{15}{9}$ d) $1\frac{4}{9}$

80.
$$\begin{array}{r} 7\frac{1}{4} \\ -\ 4\frac{2}{3} \\ \hline \end{array}$$

a) $3\frac{2}{3}$ [✓ b)] $2\frac{7}{12}$ c) $3\frac{1}{4}$ d) $\frac{7}{12}$

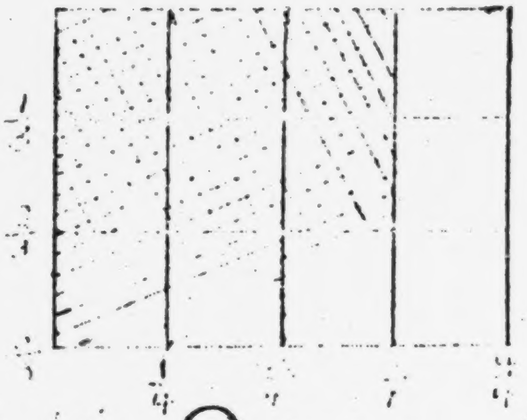
81. .5 + .04 + .005 + .345 =

a) .557 [✓ b)] .690 c) .0357 d) .0690

82. $14.13 – $6 =

a) $14.07 b)$20.13 c) $20.19 [✓ d)] $8.13

83. This model shows:



a) [illegible] b) [illegible] [✓ c)] [illegible] d) [illegible]

84. Which equation has the same solution as $\frac{12}{14} \div \frac{4}{7} = [\ ]$

[✓ a)] $[\ ] \times \frac{4}{7} = \frac{12}{14}$

b) $\frac{4}{7} \div \frac{12}{14} = [\ ]$

c) $\frac{12}{14} - \frac{4}{7} = [\ ]$

d) $[\ ] + \frac{4}{7} = \frac{12}{14}$

85. If $\frac{1}{3} \times \frac{2}{5} = \frac{2}{15}$, then

[✓ a)] $\frac{2}{15} \div \frac{2}{5} = \frac{1}{3}$

b) $\frac{2}{15} \times \frac{2}{5} = \frac{1}{3}$

c) $\frac{2}{5} \div \frac{1}{3} = \frac{2}{15}$

d) $\frac{2}{5} \div \frac{2}{15} = \frac{1}{3}$

86. Since $\frac{3}{3}$ is another name for 1, we can say that $\frac{5}{6} \times \frac{3}{3} = \frac{15}{18}$ or $\frac{5}{6}$ is equivalent to $\frac{15}{18}$.

[✓ a)] true　　b) false

87. $\frac{2}{3} \times [\ ] = \frac{4}{6}$　　$[\ ] =$

a) $\frac{3}{3}$　　b) $\frac{3}{2}$　　c) zero　　[✓ d)] $\frac{2}{2}$

88. $\frac{2}{3} \times [\ ] = 1$　　$[\ ] =$

[✓ a)] $\frac{3}{2}$　　b) 1　　c) any number　　d) $\frac{2}{3}$

89. $0 \div \frac{2}{3} = [\ ]$　　$[\ ] =$

a) 1　　[✓ b)] zero　　c) any number　　d) $\frac{3}{2}$

90. Which numeral does not name a unique rational number?

a) $\frac{3}{4}$　　b) $\frac{3}{5}$　　[✓ c)] $\frac{7}{0}$　　d) $\frac{3}{1}$

91. $\frac{8}{15} \times \frac{3}{4} = \square$

The best short cut to working this problem is:

a) $\frac{8}{\underset{5}{\cancel{15}}} \times \frac{\overset{1}{\cancel{3}}}{4}$ b) $\frac{\overset{2}{\cancel{8}}}{15} \times \frac{3}{\underset{1}{\cancel{4}}}$ [✓ c)] $\frac{\overset{2}{\cancel{8}}}{\underset{5}{\cancel{15}}} \times \frac{\overset{1}{\cancel{3}}}{\underset{1}{4}}$

92. Which is another way of writing this problem? $\begin{array}{r} 5\frac{1}{2} \\ \times 3 \\ \hline \end{array}$

a) (5 x ½)+(5x3)

b) (½ x 5)+(½ x 3)

c) (5 + 3) x ½

[✓ d)] (3 x 5) + (3 x ½)

93. $3 \times 2\frac{1}{8} = 3 \times \square$ $\square =$

a) $\frac{21}{8}$ [✓ b)] $\frac{17}{8}$ c) $\frac{8}{17}$ d) $6\frac{3}{8}$

94. $\frac{3}{4} \div \frac{7}{8} = \square$ $\square =$

a) $\frac{28}{24}$ b) $1\frac{1}{6}$ [✓ c)] $\frac{6}{7}$ d) $\frac{21}{32}$

95. $6\frac{1}{2} \div 3\frac{1}{4} = \square$ $\square =$

[✓ a)] 2 b) $2\frac{1}{4}$ c) $21\frac{1}{8}$ d) $\frac{1}{2}$

96. $\begin{array}{r} \$21.07 \\ \text{x} \quad 84 \\ \hline \end{array}$

a) $1669.88 b) $167.988 [✓ c)] $1769.88 d) $176.998

97. $25 \overline{)43.75}$

[✓ a)] 1.75 b) 19.5 c) 17.5 d) 195

98. 25% of 160 is

a) 40% [✓ b)] 40 c) 6.4 d) 64%

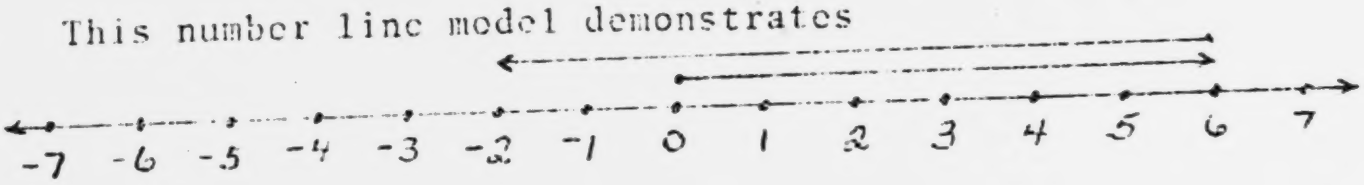
99. 14 is what per cent of 56?

a) .125 b) 8 [✓ c)] 25 d) 125

100. 346 is 50% of what number?

a) 173 b) 6.92 [✓ c)] 692 d) .693

101. This number line model demonstrates



[✓ a)] $6 + {}^{-}8 = {}^{-}2$

b) ${}^{-}8 + {}^{-}6 = {}^{-}14$

c) ${}^{-}2 + 6 = 4$

d) $6 - 2 = 4$

102. ${}^{-}2 - {}^{-}3 = \square$ This problem has the same solution as:

[✓ a)] $\square + {}^{-}3 = {}^{-}2$

b) $\square + 3 = 2$

c) ${}^{-}2 + {}^{-}3 = \square$

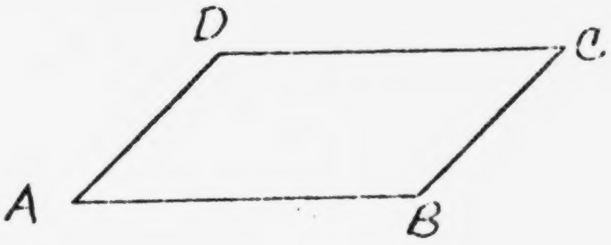
d) ${}^{-}2 \times 3 = \square$

Part II

1. A(n) ________________ is the set of points in a simple closed curve composed of the union of five line segments.

   a) rectangle [✓ b) pentagon] c) hexagon d) octogon

2. Which of the set descriptions below match the figure to the right?



   a) $\overline{AB} \cup \overline{BC} \cup \overline{CA}$

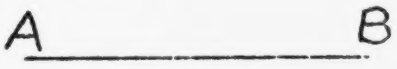
   b) $\overrightarrow{BA} \cup \overrightarrow{BC}$

   c) $\overline{AB}$

   [✓ d)] $\overline{AB} \cup \overline{BC} \cup \overline{CD} \cup \overline{DA}$

   e) $\overline{AB} \cup \overline{BC} \cup \overline{CD} \cup \overline{DE} \cup \overline{EF} \cup \overline{FA}$

3. Which of the set descriptions below match the figure to the right?



   a) $\overline{AB} \cup \overline{BC} \cup \overline{CA}$

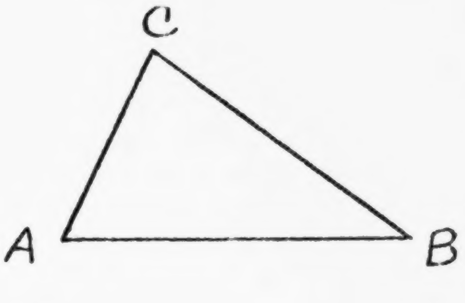
   b) $\overrightarrow{BA} \cup \overrightarrow{BC}$

   [✓ c)] $\overline{AB}$

   d) $\overline{AB} \cup \overline{BC} \cup \overline{CD} \cup \overline{DA}$

   e) $\overline{AB} \cup \overline{BC} \cup \overline{CD} \cup \overline{DE} \cup \overline{EF} \cup \overline{FA}$

4. Which of the set descriptions below match the figure to the right?



   [✓ a)] $\overline{AB} \cup \overline{BC} \cup \overline{CA}$

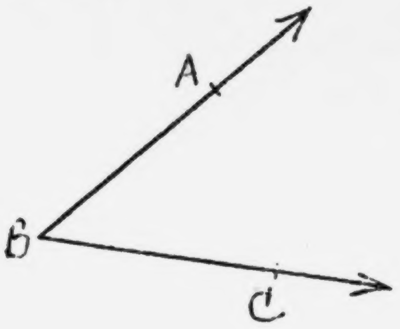
   b) $\overrightarrow{BA} \cup \overrightarrow{BC}$

   c) $\overline{AB}$

   d) $\overline{AB} \cup \overline{BC} \cup \overline{CD} \cup \overline{DA}$

   e) $\overline{AB} \cup \overline{BC} \cup \overline{CD} \cup \overline{DE} \cup \overline{EF} \cup \overline{FA}$

5. Which of the set descriptions below match the figure to the right?



a) $\overline{AB} \cup \overline{BC} \cup \overline{CA}$

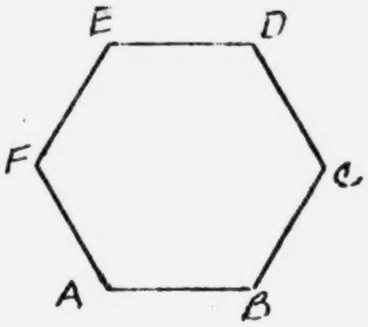
[✓ b)] $\overrightarrow{BA} \cup \overrightarrow{BC}$

c) $\overline{AB}$

d) $\overline{AB} \cup \overline{BC} \cup \overline{CD} \cup \overline{DA}$

e) $\overline{AB} \cup \overline{BC} \cup \overline{CD} \cup \overline{DE} \cup \overline{EF} \cup \overline{FA}$

6. Which of the set descriptions below match the figure to the right?



a) $\overline{AB} \cup \overline{BC} \cup \overline{CA}$

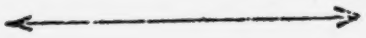
b) $\overrightarrow{BA} \cup \overrightarrow{BC}$

c) $\overline{AB}$

d) $\overline{AB} \cup \overline{BC} \cup \overline{CD} \cup \overline{DA}$

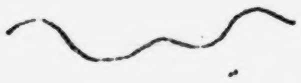
[✓ e)] $\overline{AB} \cup \overline{BC} \cup \overline{CD} \cup \overline{DE} \cup \overline{EF} \cup \overline{FA}$

7. What is the name of the figure to the right?



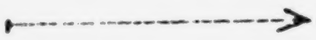
a) path [✓ b)] line c) ray d) line segment

8. What is the name of the figure to the right?



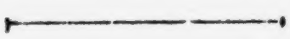
[✓ a)] path b) line c) ray d) line segment

9. What is the name of the figure to the right?



a) path b) line [✓ c)] ray d) line segment

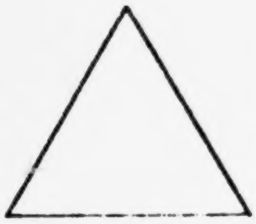
10. What is the name of the figure to the right?



a) path b) line c) ray [✓ d)] line segment

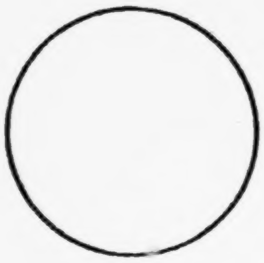
11. What is the name of the figure to the right?

a) angle
b) quadrilateral
[✓ c) triangle]
d) pentagon
e) circle



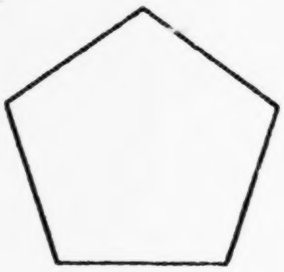
12. What is the name of the figure to the right?

a) angle
b) quadrilateral
c) triangle
d) pentagon
[✓ e) circle]



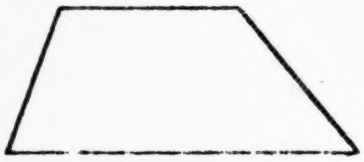
13. What is the name of the figure to the right?

a) angle
b) quadrilateral
c) triangle
[✓ d) pentagon]
e) circle

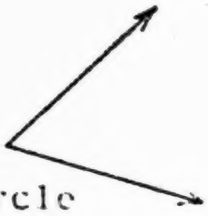


14. What is the name of the figure to the right?

a) angle
[✓ b) quadrilateral]
c) triangle
d) pentagon
e) circle



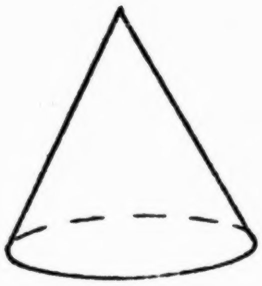
15. What is the name of the figure to the right?



[✓ a) angle] b) triangle c) pentagon d) circle

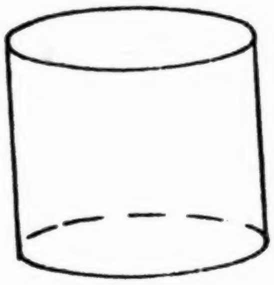
16. What is the name of the space figure to the right?

a) pyramid
b) sphere
c) cylinder
[✓ d) cone]
e) cube



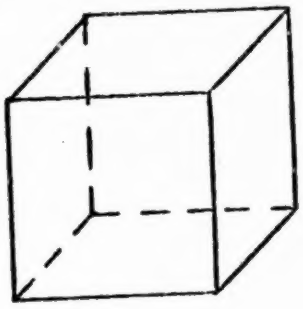
17. What is the name of the space figure to the right?

a) pyramid
b) sphere
[✓ c) cylinder]
d) cone
e) cube



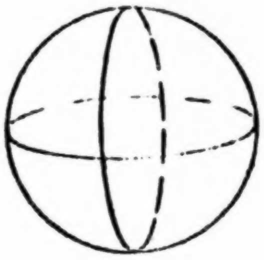
18. What is the name of the space figure to the right?

a) pyramid
b) sphere
c) cylinder
d) cone
[✓ e) cube]

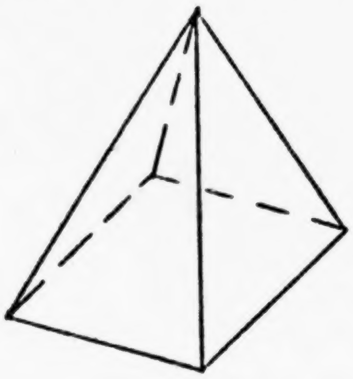


19. What is the name of the space figure to the right?

a) pyramid
[✓ b) sphere]
c) cylinder
d) cone
e) cube



20. What is the name of the space figure to the right?



[✓ a) pyramid]

b) sphere

c) cylinder

d) cone

e) cube

21. The set of all points in space one inch from a given line is a(n) ________________.

[✓ a) cylinder] b) cone c) sphere d) polyhedron

22. A(n) ____________________ is the set of all points two inches from a given point in space.

a) cylinder b) cone c) plane [✓ d) sphere]

23. ____________________ lines are lines in the same plane that never meet.

a) perpendicular b) parallel [✓ c) intersecting]

24. Two intersecting lines have ________________________ point(s) in common.

a) no [✓ b) exactly one] c) more than one

25. Perpendicular lines are intersecting lines which form

a) acute angles b) obtuse angles [✓ c) right angles]

26. The ________________ of a polygon is equal to the sum of its sides.

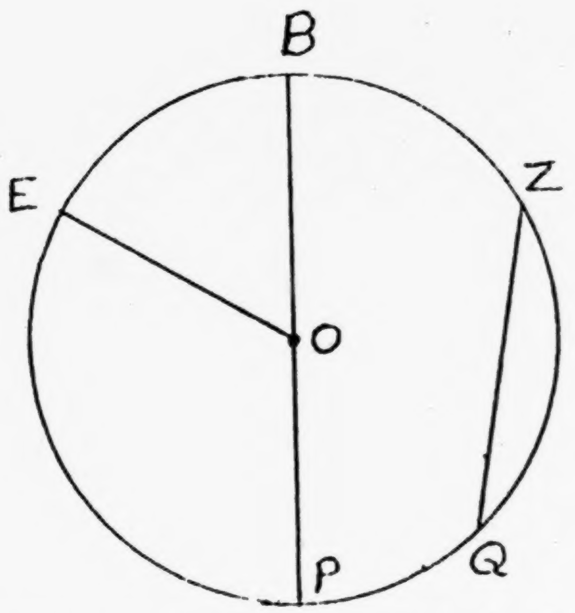
a) area b) volume [✓ c) perimeter] d) diagonal

27. Congruent geometric figures have the same

a) size only

b) shape only

[✓ c) shape and size]



28. In the circle above, point O is called the ____________.

a) radius b) diameter c) chord [✓ d)] center e) arc

29. In the circle above, $\overline{ZQ}$ is called a(n) ______________.

a) radius b) diameter [✓ c)] chord d) center e) arc

30. In the circle above, $\overline{BP}$ is called a(n) ______________.

a) radius b)center c) diagonal [✓ d)] diameter e) arc

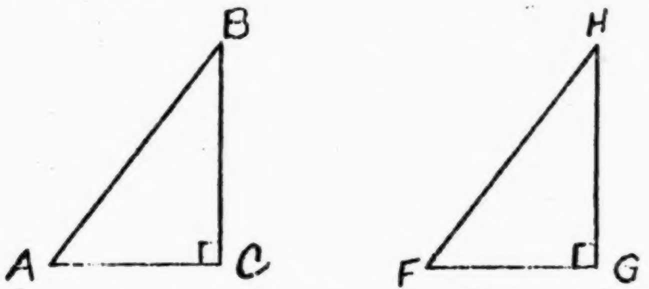
31. In the circle above, $\overline{OE}$ is called a(n) ______________.

[✓ a)] radius b) chord c) diameter d) arc e) center

32. In the circle above, $\overset{\frown}{ZQ}$ is called a(n) ______________.

a) radius b) chord c) diameter d) center [✓ e)] arc

33.



If $\triangle ABC \cong \triangle FGH$, which of the following is NOT true?

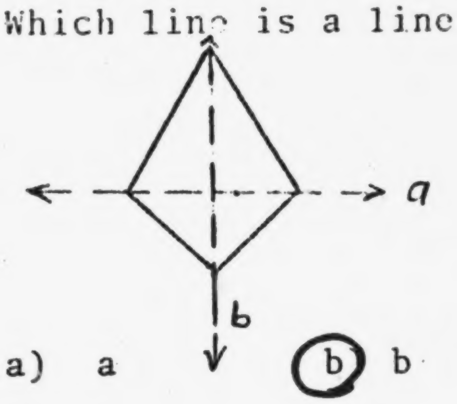
a) $\overline{AC} \cong \overline{FG}$

b) $\angle ABC \cong \angle FHG$

[✓ c)] $\angle G \cong \angle A$

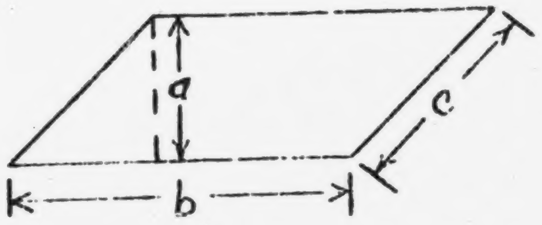
d) $\overline{BC} \cong \overline{HG}$

34. Which line is a line of symmetry?



a) a [✓ b)] b c) both a and b

35. The formula for finding the area of any parallelogram is



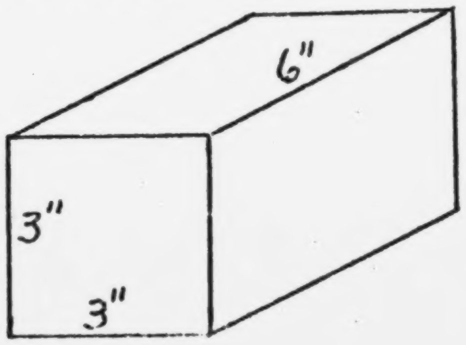
a) $A = \frac{1}{2} \times b \times a$

b) $A = b \times c$

[✓ c)] $A = b \times a$

d) $A = a + b + c$

36. The volume of the right rectangular prism shown is



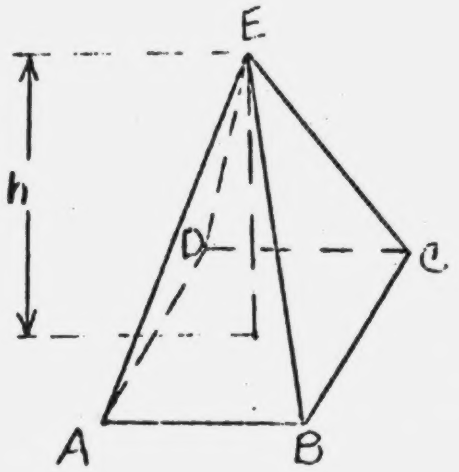
a) 90 square inches

[✓ b)] 54 cubic inches

c) 12 cubic inches

d) 48 cubic inches

37. In the pyramid to the right, $\square$ABCD is ______________.



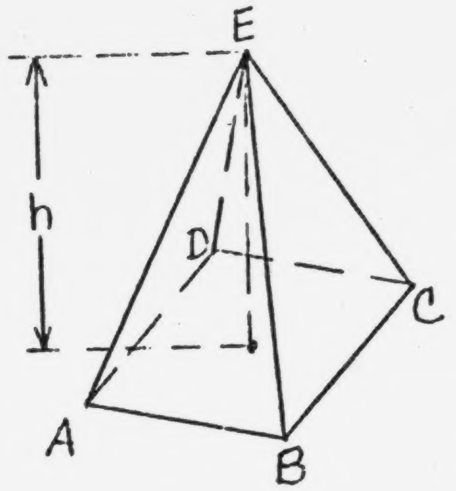
a) a vertex

b) an edge

[✓ c)] the base

d) a lateral surface

e) the altitude



38. In the pyramid above, $\overline{EB}$ is ________________.

a) a vertex

[✓ b)] an edge

c) the base

d) a lateral surface

e) the altitude

39. In the pyramid above, C is ________________.

[✓ a)] a vertex

b) an edge

c) the base

d) a lateral surface

e) the altitude

40. In the pyramid above, $\triangle BEC$ is ________________.

a) a vertex

b) an edge

c) the base

[✓ d)] a lateral surface

e) the altitude

41. In the pyramid above, h is ________________.

a) a vertex b) an edge c) the base [✓ d)] the altitude

42. An angle can be measured by using a ______________.

a) straightedge b) compass [✓ c) protractor] d) yardstick

43. A field is 128.246 feet long. Correct to the nearest tenth of a foot, this is __________.

a) 130 feet b) 128 feet c) 128.25 feet [✓ d) 128.2 feet]

44. If the measure of $\overline{AB}$ is given as 2½ inches, correct to the nearest half inch, we know it is ______________.

[✓ a) between 2¼ inches and 2 3/4 inches.]

b) less than 2½ inches.

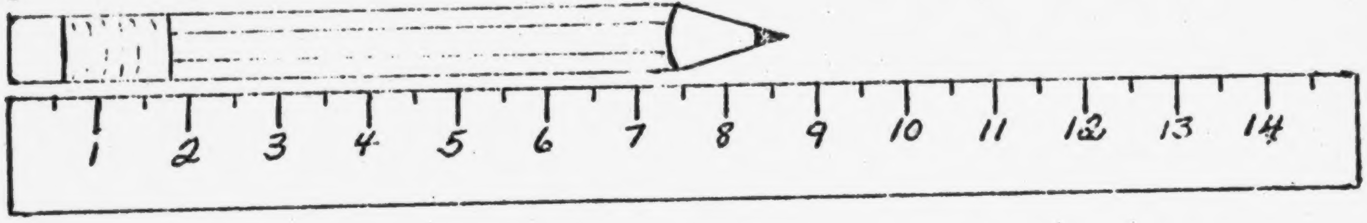
c) more than 2½ inches.

d) between 2½ in. and 3 inches.

45. The weight of a human being is best expressed in what type of units?

a) carats [✓ b) pounds] c) ounces d) hundredweight

46. To the nearest centimeter, what is the length of the pencil shown below?



a) 8 [✓ b) 9] c) 10 d) 84

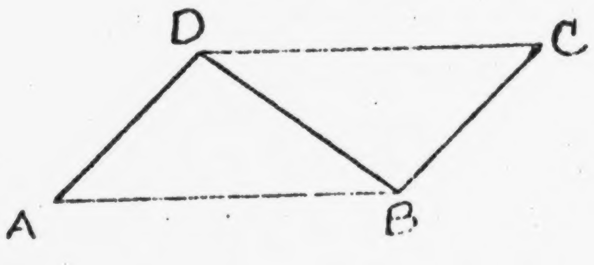
47. If the area of ▱ ABCD is 60 square inches, what is the area of $\triangle$ ABD?

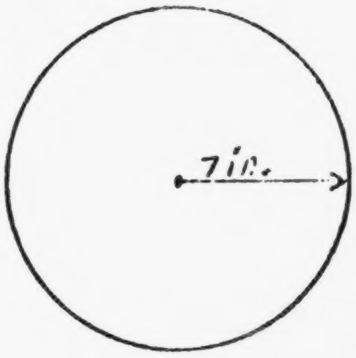
a) 20 sq. in.

[✓ b) 30 sq. in.]

c) 60 sq. in.

d) 15 sq. in.





area $= \pi \times r^2$

circumference $= \pi \times d$
(Use $\frac{22}{7}$ for π)

48. The area of the circle above is

a) 44 inches b) 22 square in. c) 44 sq. in. [✓ d) 154 sq. in.]

49. The circumference of the circle above is

[✓ a) 44 in.] b) 22 in. c) 44 sq. in. d) 154 sq. in.

50. If a football game begins on live television at 1:00P.M. in New York City, at what time should you turn on your set in Las Vegas to see the kickoff?

a) 4:00 P.M. b) 4:00 A.M. [✓ c) 10:00 A.M.] d) 10:00 P.M.

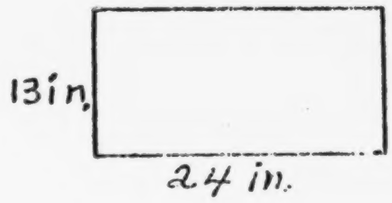
51. Find the area of the figure to the right.

a) 74 square inches

b) 74 inches

[✓ c) 312 square inches]

d) 312 inches



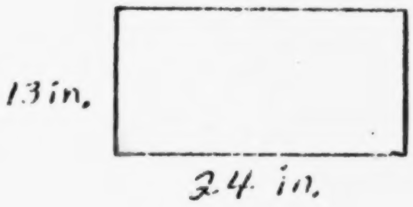
52. Find the perimeter of the figure to the right.

a) 74 square inches

[✓ b) 74 inches]

c) 312 square inches

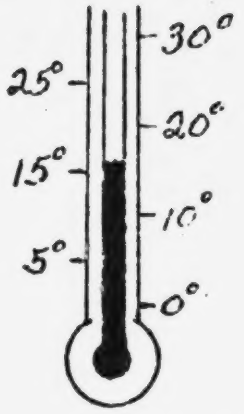
d) 312 inches



53. In comparing the length of the meter with the length of the yard, we say that a meter is __________ a yard.

a) the same as b) less than [✓ c) greater than] d) equal to

54. This thermometer shows about



a) 12° [✓ b) 15°] c) 10° d) 32°

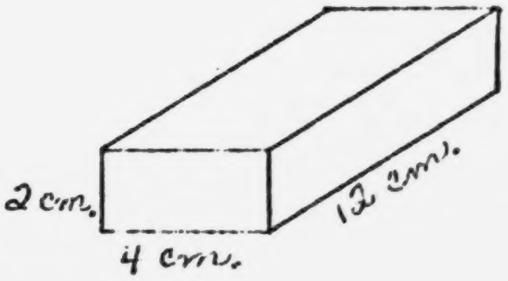
55. Find the surface area of the figure at the right.

a) 20 cubic centimeters

b) 96 cubic centimeters

[✓ c) 160 square centimeters]

d) 20 square centimeters



56. 5 yds. 1 ft. 3 in.
+3 yds. 2 ft. 3 in.

a) 9 yd. 3 ft. 6 in.

[✓ b) 9 yd. 6 in.]

c) 9 yd. 1 ft. 12 in.

d) 8 yd. 1 ft.

57. 6 lb. 4 oz.
-3 lb. 10 oz.

a) 3 lb. 10 oz.

b) 3 lb. 6 oz.

[✓ c) 2 lb. 10 oz.]

d) 9 oz. 14 oz.

58. 1 gal. + 2½ qt. =

a) 3 ½ pt. b) 6 ½ pt. c) 9 pt. [✓ d) 13 pt.]

59. An airplane flies at an average speed of 720 miles per hour. How many miles per minute is this?

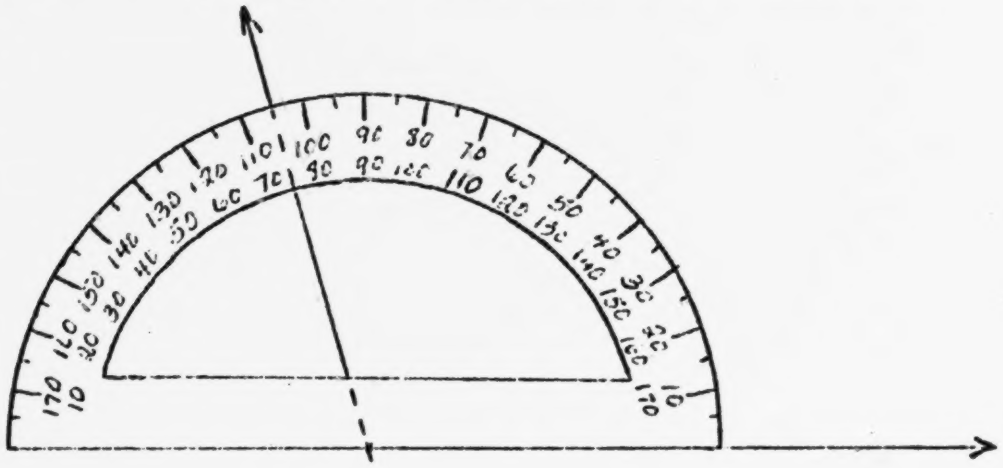
[✓ a) 12] b) 7.2 c) 8,640 d) 720

60. $C^\circ = \frac{5}{9} \times (F^\circ - 32^\circ)$ ← Use this formula.

A temperature of 59° Fahrenheit is __________ centigrade.

a) about 50 b) 48 [✓ c) 15] d) below zero

61. The diagram below shows a protractor that is placed on an angle. How many degrees does the angle measure?

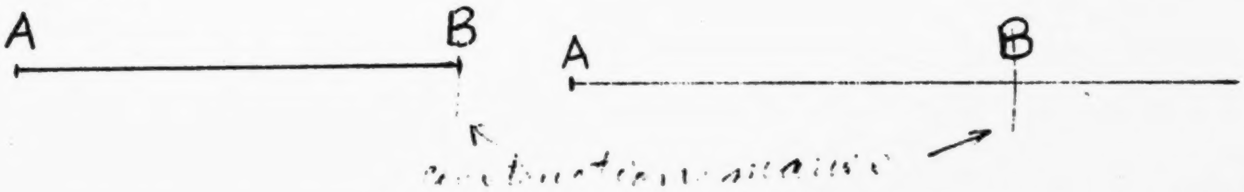

170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170

[✓ a) 105] b) 70 c) 75 d) 110

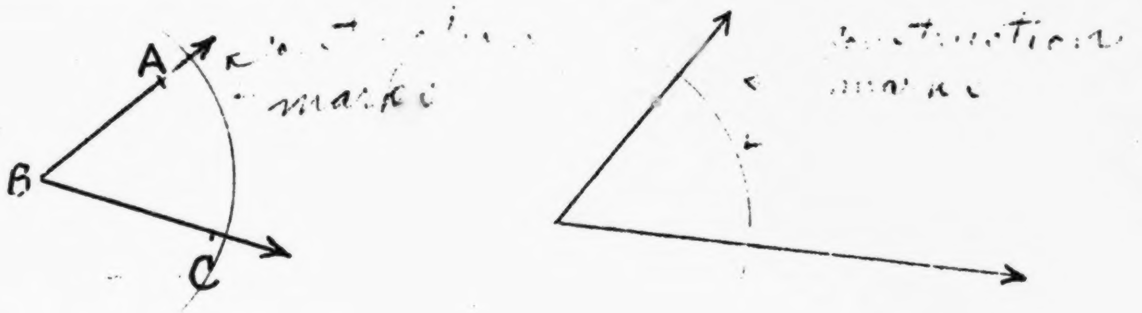
Part III

Directions: You are to make several geometric constructions on this page and on the next two pages. You should use only a straight edge, pencil and in some cases, a compass. Do Not erase the marks that you make on the paper as you do the constructing. These marks show whether or not you did the construction correctly.

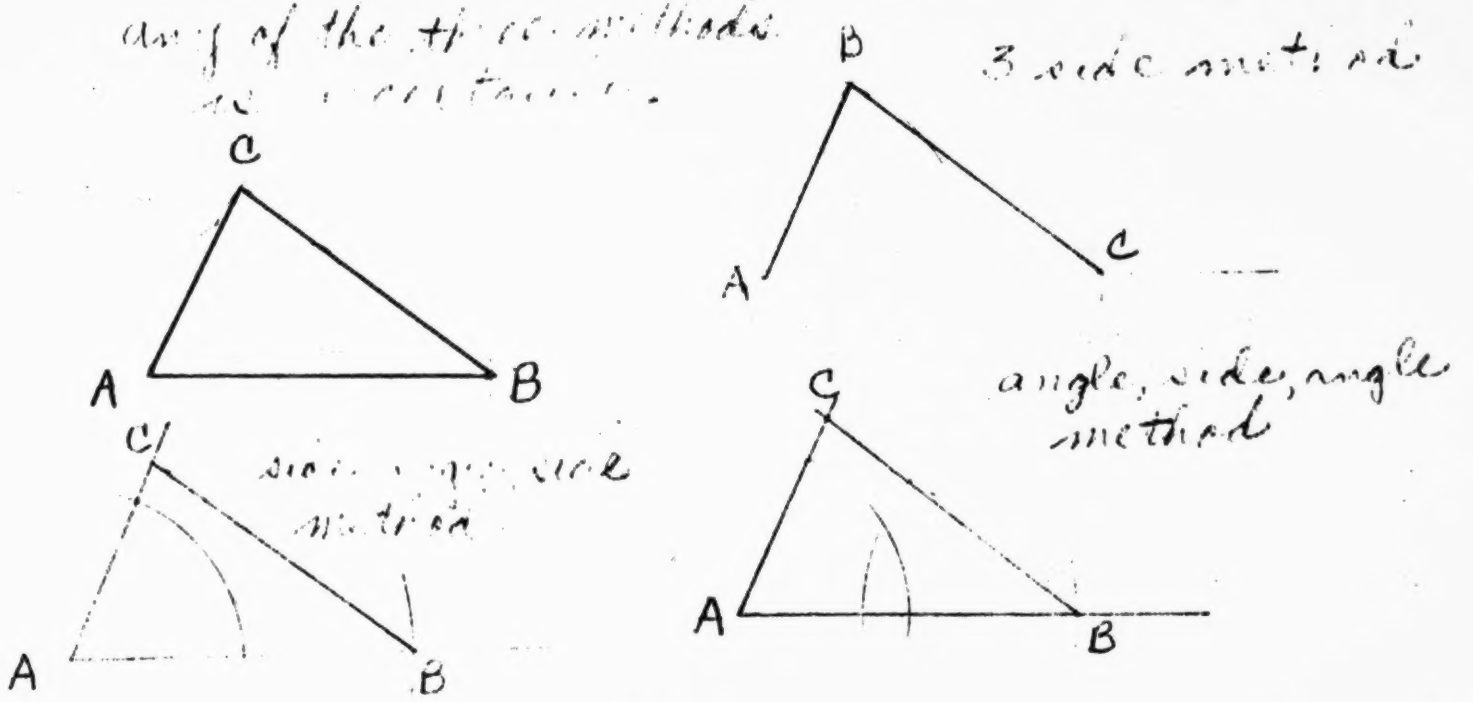
1. Construct a line segment in the box that is congruent to $\overline{AB}$.


A
B
A
B
construction marks

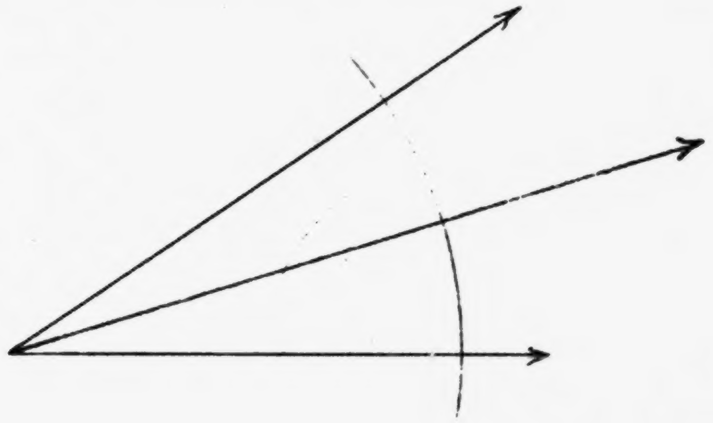
2. Construct an angle in the box that is congruent to ∠ABC.


A
B
C
construction marks
construction marks

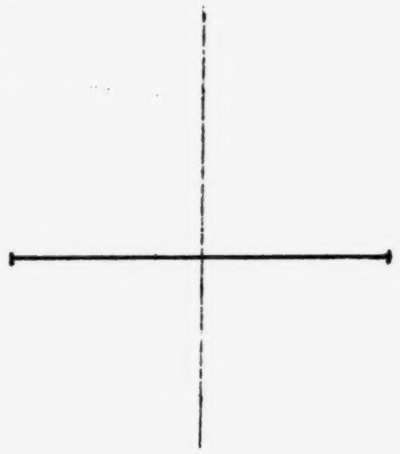
3. Construct a triangle in the box that is congruent to ABC and then label the points A, B and C on on your triangle.


any of the three methods
are acceptable.
3 side method
C
A
B
B
A
C
C
side angle side
method
angle, side, angle
method
C
A
B
A
B

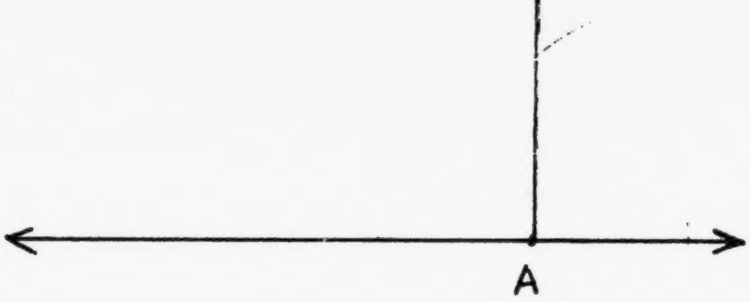
4. Bisect the angle below.



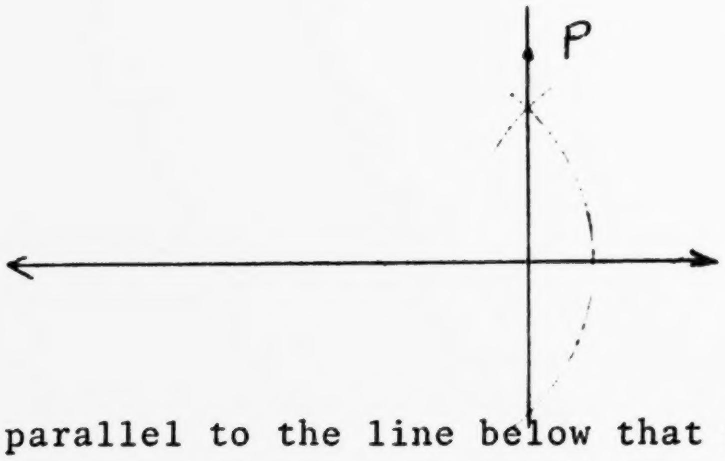
5. Construct the perpendicular bisector of the line segment below.



6. Construct a perpendicular to the line below from point A.

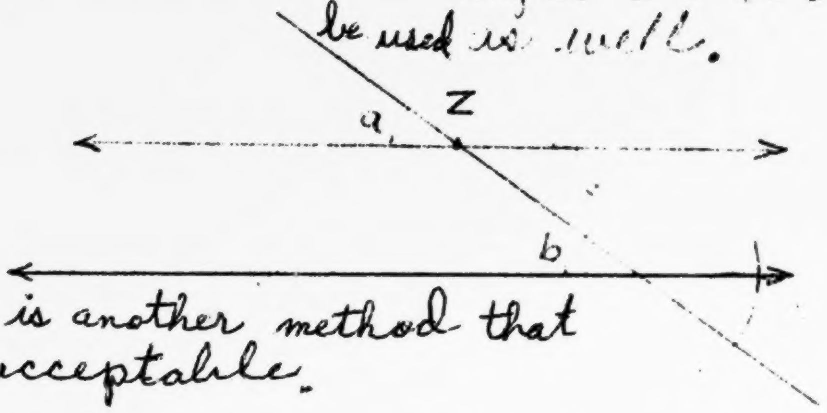


7. Construct a perpendicular to the line below that passes through point P.



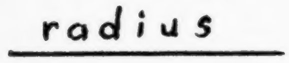
8. Construct a line parallel to the line below that passes through point Z.

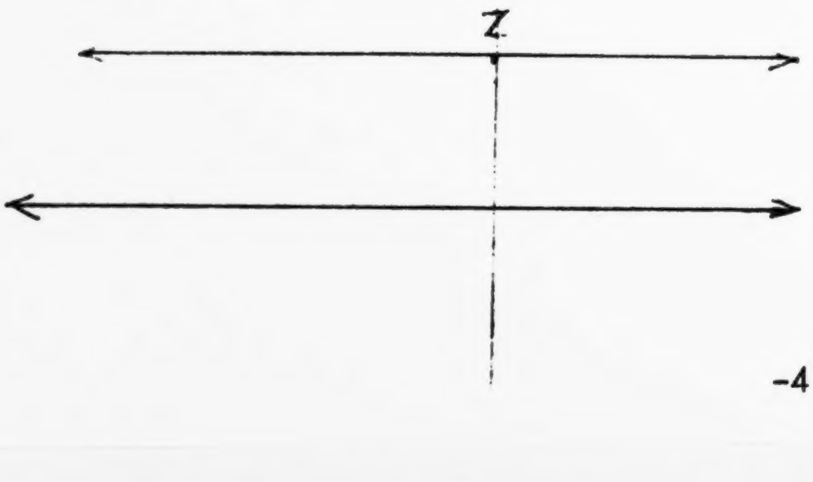
angles a and b or b and c may be used as well.



Note: Below is another method that is acceptable.

9. Using only a compass, construct a circle below that has its center at C and a radius congruent to the one shown at the left.





Part IV time limit: 3 minutes

ADDITION AND SUBTRACTION TEST

(1) $\begin{array}{r} 9 \\ +2 \\ \hline 11 \end{array}$	(2) $\begin{array}{r} 8 \\ +7 \\ \hline 15 \end{array}$	(3) $\begin{array}{r} 7 \\ +6 \\ \hline 13 \end{array}$	(4) $\begin{array}{r} 8 \\ +5 \\ \hline 13 \end{array}$	(5) $\begin{array}{r} 9 \\ +4 \\ \hline 13 \end{array}$	(6) $\begin{array}{r} 4 \\ +8 \\ \hline 12 \end{array}$
(7) $\begin{array}{r} 7 \\ +4 \\ \hline 11 \end{array}$	(8) $\begin{array}{r} 8 \\ +3 \\ \hline 11 \end{array}$	(9) $\begin{array}{r} 5 \\ +7 \\ \hline 12 \end{array}$	(10) $\begin{array}{r} 3 \\ +9 \\ \hline 12 \end{array}$	(11) $\begin{array}{r} 6 \\ +8 \\ \hline 14 \end{array}$	(12) $\begin{array}{r} 2 \\ +8 \\ \hline 10 \end{array}$
(13) $\begin{array}{r} 14 \\ -9 \\ \hline 5 \end{array}$	(14) $\begin{array}{r} 13 \\ -8 \\ \hline 5 \end{array}$	(15) $\begin{array}{r} 11 \\ -6 \\ \hline 5 \end{array}$	(16) $\begin{array}{r} 12 \\ -3 \\ \hline 9 \end{array}$	(17) $\begin{array}{r} 18 \\ -9 \\ \hline 9 \end{array}$	(18) $\begin{array}{r} 15 \\ -7 \\ \hline 8 \end{array}$
(19) $\begin{array}{r} 11 \\ -8 \\ \hline 3 \end{array}$	(20) $\begin{array}{r} 13 \\ -4 \\ \hline 9 \end{array}$	(21) $\begin{array}{r} 10 \\ -7 \\ \hline 3 \end{array}$	(22) $\begin{array}{r} 14 \\ -5 \\ \hline 9 \end{array}$	(23) $\begin{array}{r} 11 \\ -2 \\ \hline 9 \end{array}$	(24) $\begin{array}{r} 13 \\ -6 \\ \hline 7 \end{array}$

Time limit: 4 minutes

MULTIPLICATION TEST

(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
5	9	8	7	4	6	7	0
x 5	x 4	x 6	x 0	x 8	x 9	x 4	x 6
25	36	48	0	32	54	28	0

(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
2	6	7	5	3	2	3	7
x 4	x 6	x 7	x 9	x 7	x 2	x 9	x 2
8	36	49	45	21	4	27	14

(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)
4	6	3	2	5	9	7	6
x 3	x 8	x 2	x 8	x 4	x 2	x 6	x 5
12	48	6	16	20	18	42	30

(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)
8	7	3	5	7	8	8	4
x 7	x 5	x 3	x 2	x 1	x 2	x 3	x 6
56	35	9	10	7	16	24	24

(57)	(58)	(59)	(60)	(61)	(62)	(63)	(64)
9	5	8	6	4	3	1	9
x 9	x 7	x 8	x 3	x 4	x 5	x 4	x 6
81	35	64	18	16	15	4	54

Time limit: 4 minutes

DIVISION TEST

(65) $\begin{array}{r}3\\3\overline{)9}\end{array}$ (66) $\begin{array}{r}2\\6\overline{)12}\end{array}$ (67) $\begin{array}{r}7\\5\overline{)35}\end{array}$ (68) $\begin{array}{r}8\\8\overline{)64}\end{array}$

(69) $\begin{array}{r}8\\1\overline{)8}\end{array}$ (70) $\begin{array}{r}9\\5\overline{)45}\end{array}$ (71) $\begin{array}{r}9\\2\overline{)18}\end{array}$ (72) $\begin{array}{r}0\\7\overline{)0}\end{array}$

(73) $\begin{array}{r}6\\7\overline{)42}\end{array}$ (74) $\begin{array}{r}6\\4\overline{)24}\end{array}$ (75) $\begin{array}{r}5\\2\overline{)10}\end{array}$ (76) $\begin{array}{r}6\\9\overline{)54}\end{array}$

(77) $\begin{array}{r}4\\4\overline{)16}\end{array}$ (78) $\begin{array}{r}2\\2\overline{)4}\end{array}$ (79) $\begin{array}{r}3\\7\overline{)21}\end{array}$ (80) $\begin{array}{r}8\\9\overline{)72}\end{array}$

(81) $\begin{array}{r}4\\5\overline{)20}\end{array}$ (82) $\begin{array}{r}8\\3\overline{)24}\end{array}$ (83) $\begin{array}{r}3\\2\overline{)6}\end{array}$ (84) $\begin{array}{r}9\\9\overline{)81}\end{array}$

(85) $\begin{array}{r}6\\6\overline{)36}\end{array}$ (86) $\begin{array}{r}6\\3\overline{)18}\end{array}$ (87) $\begin{array}{r}3\\5\overline{)15}\end{array}$ (88) $\begin{array}{r}4\\9\overline{)36}\end{array}$

(89) $\begin{array}{r}7\\7\overline{)49}\end{array}$ (90) $\begin{array}{r}8\\4\overline{)32}\end{array}$ (91) $\begin{array}{r}4\\3\overline{)12}\end{array}$ (92) $\begin{array}{r}9\\7\overline{)63}\end{array}$

(93) $\begin{array}{r}5\\8\overline{)40}\end{array}$ (94) $\begin{array}{r}3\\9\overline{)27}\end{array}$ (95) $\begin{array}{r}7\\2\overline{)14}\end{array}$ (96) $\begin{array}{r}2\\8\overline{)16}\end{array}$

(97) $\begin{array}{r}5\\4\overline{)20}\end{array}$ (98) $\begin{array}{r}8\\6\overline{)48}\end{array}$ (99) $\begin{array}{r}4\\7\overline{)28}\end{array}$ (100) $\begin{array}{r}7\\8\overline{)56}\end{array}$

(101) $\begin{array}{r}5\\5\overline{)25}\end{array}$ (102) $\begin{array}{r}7\\3\overline{)21}\end{array}$ (103) $\begin{array}{r}2\\4\overline{)8}\end{array}$ (104) $\begin{array}{r}5\\6\overline{)30}\end{array}$